

532622010700seq  
SEQUENCE LISTING

<110> Plesch, Gunnar  
Blau, Astrid  
Daschner, Klaus  
<120> Method for Identifying Herbicidally Active Substances  
<130> 532622010700  
<140> Not yet assigned  
<141> 2005-02-15  
<150> PCT/EP03/08393  
<151> 2003-07-30

<160> 52

<170> PatentIn version 3.1

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Arg Lys Arg Thr Ser Ser Arg Phe Leu Ile Phe Ser Val Arg Ala Ser  
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Ser Ser Met Asp Asp Met Asp Thr Val Tyr Lys Gln Leu Gly Leu Phe  
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Ser Asn Ala Ser Gly Ser Tyr Ser Ala Asn Ile Ser Leu Ala Val  
Page 15

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Thr Asp Val Ser His Tyr Phe	Asp Ser Asp Pro Thr Asn Leu Val				
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Gln Ser Leu Arg Lys Asp Lys	Lys Lys Pro Ser Ser Tyr Ile Ala				
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Ile	Asp	Glu	Leu	Lys	Lys	Thr	Gly	Lys	Leu	Ala	Leu	Asp	His	Ala	Asp		
545					550					555					560		
gaa	cga	gca	ctg	ggg	ctt	cac	ttg	ctt	cga	ttt	gct	gag	acg	gtg	gag	1728	
Glu	Arg	Ala	Leu	Gly	Leu	His	Leu	Leu	Arg	Phe	Ala	Glu	Thr	Val	Glu		
				565					570					575			
gaa	gct	tgt	acc	aac	tta	tta	ccg	agt	ggt	ctg	tgc	gag	tac	ctc	tac	1776	
Glu	Ala	Cys	Thr	Asn	Leu	Leu	Pro	Ser	Val	Leu	Cys	Glu	Tyr	Leu	Tyr		
			580					585					590				
aat	tta	tct	gaa	cac	ttt	acc	aga	ttc	tac	tcc	aat	tgt	cag	gtc	aat	1824	
Asn	Leu	Ser	Glu	His	Phe	Thr	Arg	Phe	Tyr	Ser	Asn	Cys	Gln	Val	Asn		
		595					600					605					
ggt	tca	cca	gag	gag	aca	agc	cgt	ctc	cta	ctt	tgt	gaa	gca	acg	gcc	1872	
Gly	Ser	Pro	Glu	Glu	Thr	Ser	Arg	Leu	Leu	Leu	Cys	Glu	Ala	Thr	Ala		
		610				615					620						
ata	gtc	atg	cgg	aaa	tgc	ttc	cac	ctt	ctt	gga	atc	act	ccg	gtt	tac	1920	
Ile	Val	Met	Arg	Lys	Cys	Phe	His	Leu	Leu	Gly	Ile	Thr	Pro	Val	Tyr		
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<213> Arabidopsis thaliana

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Lys Leu Arg Ala Thr Ala Trp Arg Phe Ala Phe Ser Ser Arg Ala Lys  
35 40 45

Ser Val Val Ala Met Ala Ala Asn Glu Glu Phe Thr Gly Asn Leu Lys  
50 55 60

Arg Gln Leu Ala Lys Leu Phe Asp Val Ser Leu Lys Leu Thr Val Pro  
65 70 75 80

Asp Glu Pro Ser Val Glu Pro Leu Val Ala Ala Ser Ala Leu Gly Lys  
85 90 95

Phe Gly Asp Tyr Gln Cys Asn Asn Ala Met Gly Leu Trp Ser Ile Ile  
100 105 110

Lys Gly Lys Gly Thr Gln Phe Lys Gly Pro Pro Ala Val Gly Gln Ala  
115 120 125

Leu Val Lys Ser Leu Pro Thr Ser Glu Met Val Glu Ser Cys Ser Val  
130 135 140

Ala Gly Pro Gly Phe Ile Asn Val Val Leu Ser Ala Lys Trp Met Ala  
145 150 155 160

Lys Ser Ile Glu Asn Met Leu Ile Asp Gly Val Asp Thr Trp Ala Pro  
165 170 175

Thr Leu Ser Val Lys Arg Ala Val Val Asp Phe Ser Ser Pro Asn Ile  
180 185 190

Ala Lys Glu Met His Val Gly His Leu Arg Ser Thr Ile Ile Gly Asp  
195 200 205

Thr Leu Ala Arg Met Leu Glu Tyr Ser His Val Glu Val Leu Arg Arg  
210 215 220

532622010700seq

Asn His Val Gly Asp Trp Gly Thr Gln Phe Gly Met Leu Ile Glu Tyr  
225 230 235 240

Leu Phe Glu Lys Phe Pro Asp Thr Asp Ser Val Thr Glu Thr Ala Ile  
245 250 255

Gly Asp Leu Gln Val Phe Tyr Lys Ala Ser Lys His Lys Phe Asp Leu  
260 265 270

Asp Glu Ala Phe Lys Glu Lys Ala Gln Gln Ala Val Val Arg Leu Gln  
275 280 285

Gly Gly Asp Pro Val Tyr Arg Lys Ala Trp Ala Lys Ile Cys Asp Ile  
290 295 300

Ser Arg Thr Glu Phe Ala Lys Val Tyr Gln Arg Leu Arg Val Glu Leu  
305 310 315 320

Glu Glu Lys Gly Glu Ser Phe Tyr Asn Pro His Ile Ala Lys Val Ile  
325 330 335

Glu Glu Leu Asn Ser Lys Gly Leu Val Glu Glu Ser Glu Gly Ala Arg  
340 345 350

Val Ile Phe Leu Glu Gly Phe Asp Ile Pro Leu Met Val Val Lys Ser  
355 360 365

Asp Gly Gly Phe Asn Tyr Ala Ser Thr Asp Leu Thr Ala Leu Trp Tyr  
370 375 380

Arg Leu Asn Glu Glu Lys Ala Glu Trp Ile Ile Tyr Val Thr Asp Val  
385 390 395 400

Gly Gln Gln Gln His Phe Asn Met Phe Phe Lys Ala Ala Arg Lys Ala  
405 410 415

Gly Trp Leu Pro Asp Asn Asp Lys Thr Tyr Pro Arg Val Asn His Val  
420 425 430

Gly Phe Gly Leu Val Leu Gly Glu Asp Gly Lys Arg Phe Arg Thr Arg  
435 440 445

Ala Thr Asp Val Val Arg Leu Val Asp Leu Leu Asp Glu Ala Lys Thr  
450 455 460

Arg Ser Lys Leu Ala Leu Ile Glu Arg Gly Lys Asp Lys Glu Trp Thr  
Page 21

532622010700seq  
475

465                      470                      480

Pro Glu Glu Leu Asp Gln Thr Ala Glu Ala Val Gly Tyr Gly Ala Val  
                                 485                                   490                                   495

Lys Tyr Ala Asp Leu Lys Asn Asn Arg Leu Thr Asn Tyr Thr Phe Ser  
                                 500                                   505                                   510

Phe Asp Gln Met Leu Asn Asp Lys Gly Asn Thr Ala Val Tyr Leu Leu  
                                 515                                   520                                   525

Tyr Ala His Ala Arg Ile Cys Ser Ile Ile Arg Lys Ser Gly Lys Asp  
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Ile Asp Glu Leu Lys Lys Thr Gly Lys Leu Ala Leu Asp His Ala Asp  
545                                   550                                   555                                   560

Glu Arg Ala Leu Gly Leu His Leu Leu Arg Phe Ala Glu Thr Val Glu  
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Glu Ala Cys Thr Asn Leu Leu Pro Ser Val Leu Cys Glu Tyr Leu Tyr  
                                 580                                   585                                   590

Asn Leu Ser Glu His Phe Thr Arg Phe Tyr Ser Asn Cys Gln Val Asn  
                                 595                                   600                                   605

Gly Ser Pro Glu Glu Thr Ser Arg Leu Leu Leu Cys Glu Ala Thr Ala  
610                                   615                                   620

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Lys Ile

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<213> Arabidopsis thaliana

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<222> (1)..(1491)

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gaa gaa gga aac atg gtg tat gga gat atc gca tat ttg gta ttg gat Glu Glu Gly Asn Met Val Tyr Gly Asp Ile Ala Tyr Leu Val Leu Asp	260	265	270	816
gag gca gat act atg ttt gat cgt ggc ttt ggt ccc gaa att cgt aaa Glu Ala Asp Thr Met Phe Asp Arg Gly Phe Gly Pro Glu Ile Arg Lys	275	280	285	864
ttc ctt gcc cca ctg aat caa cat att aag gta gtg aat gaa att gtg Phe Leu Ala Pro Leu Asn Gln His Ile Lys Val Val Asn Glu Ile Val	290	295	300	912
agt ttt cag gct gtt cag aag tta gtc gat gag gag ttt caa ggg ata Ser Phe Gln Ala Val Gln Lys Leu Val Asp Glu Glu Phe Gln Gly Ile	305	310	315	960
gag cat ttg cgt aca tca aca ctg cat aaa aag ata gca aac gct cgc Glu His Leu Arg Thr Ser Thr Leu His Lys Lys Ile Ala Asn Ala Arg	325	330	335	1008
cat gac ttc atc aag ctt tca ggt ggt gaa gat aag cta gaa gca ctt His Asp Phe Ile Lys Leu Ser Gly Gly Glu Asp Lys Leu Glu Ala Leu	340	345	350	1056
cta cag gtt ctt gaa cct agc cta gcc aaa ggg agc aag gtg atg gtc Leu Gln Val Leu Glu Pro Ser Leu Ala Lys Gly Ser Lys Val Met Val	355	360	365	1104
ttc tgt aac act ttg aac tcc agt cgc gct gtt gat cac tat ctt tct Phe Cys Asn Thr Leu Asn Ser Ser Arg Ala Val Asp His Tyr Leu Ser	370	375	380	1152
gaa aac cag atc tcc act gta aat tat cac ggt gaa gtt cca gca gaa Glu Asn Gln Ile Ser Thr Val Asn Tyr His Gly Glu Val Pro Ala Glu	385	390	395	1200
caa agg gtt gag aat ttg aaa aag ttc aag gac gaa gaa gga gac tgt Gln Arg Val Glu Asn Leu Lys Lys Phe Lys Asp Glu Glu Gly Asp Cys	405	410	415	1248
ccc acg cta gtg tgc acg gat ttg gct gca agg ggt ctg gac ctc gac Pro Thr Leu Val Cys Thr Asp Leu Ala Ala Arg Gly Leu Asp Leu Asp	420	425	430	1296
gtt gat cat gta gtc atg ttt gat ttc cca aag aac tcg att gac tac Val Asp His Val Val Met Phe Asp Phe Pro Lys Asn Ser Ile Asp Tyr	435	440	445	1344
ctt cat cgc act gga aga aca gct cgg atg ggt gct aaa ggt ttg ttt Leu His Arg Thr Gly Arg Thr Ala Arg Met Gly Ala Lys Gly Leu Phe	450	455	460	1392
cat acc tct aga tta tca ctt gtt aag ttc tcg tat ttc aga tgg ttt His Thr Ser Arg Leu Ser Leu Val Lys Phe Ser Tyr Phe Arg Trp Phe	465	470	475	1440
cgg cta ggg tgg cgt acc aag ttt tca gat ttt ttt gtt tat gga cta				1488



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Arg Leu Gly Trp Arg Thr Lys Phe Ser Asp Phe Phe Val Tyr Gly Leu  
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tag

1491

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<212> PRT

<213> Arabidopsis thaliana

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20 25 30

His Lys Pro Arg Phe His His Ala Phe Arg Pro Leu Tyr Ser Ala Ala  
35 40 45

Ala Thr Thr Ser Ser Pro Thr Thr Glu Thr Asn Val Thr Asp Pro Asp  
50 55 60

Gln Leu Lys His Thr Ile Leu Leu Glu Arg Leu Arg Leu Arg His Leu  
65 70 75 80

Lys Glu Ser Ala Lys Pro Pro Gln Gln Arg Pro Ser Ser Val Val Gly  
85 90 95

Val Glu Glu Glu Ser Ser Ile Arg Lys Lys Ser Lys Lys Leu Val Glu  
100 105 110

Asn Phe Gln Glu Leu Gly Leu Ser Glu Glu Val Met Gly Ala Leu Gln  
115 120 125

Glu Leu Asn Ile Glu Val Pro Thr Glu Ile Gln Cys Ile Gly Ile Pro  
130 135 140

Ala Val Met Glu Arg Lys Ser Val Val Leu Gly Ser His Thr Gly Ser  
145 150 155 160

Gly Lys Thr Leu Ala Tyr Leu Leu Pro Ile Val Gln Val Leu Ser Glu  
165 170 175

Leu Met Arg Glu Asp Glu Ala Asn Leu Gly Lys Lys Thr Lys Pro Arg

532622010700seq

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195	200	205
Val Cys Leu His Gln Asp Tyr His His Ala Arg Phe Arg Ser Ile Leu		
210	215	220
Val Ser Gly Gly Ser Arg Ile Arg Pro Gln Glu Asp Ser Leu Asn Asn		
225	230	235
Ala Ile Asp Met Val Val Gly Thr Pro Gly Arg Ile Leu Gln His Ile		
245	250	255
Glu Glu Gly Asn Met Val Tyr Gly Asp Ile Ala Tyr Leu Val Leu Asp		
260	265	270
Glu Ala Asp Thr Met Phe Asp Arg Gly Phe Gly Pro Glu Ile Arg Lys		
275	280	285
Phe Leu Ala Pro Leu Asn Gln His Ile Lys Val Val Asn Glu Ile Val		
290	295	300
Ser Phe Gln Ala Val Gln Lys Leu Val Asp Glu Glu Phe Gln Gly Ile		
305	310	315
Glu His Leu Arg Thr Ser Thr Leu His Lys Lys Ile Ala Asn Ala Arg		
325	330	335
His Asp Phe Ile Lys Leu Ser Gly Gly Glu Asp Lys Leu Glu Ala Leu		
340	345	350
Leu Gln Val Leu Glu Pro Ser Leu Ala Lys Gly Ser Lys Val Met Val		
355	360	365
Phe Cys Asn Thr Leu Asn Ser Ser Arg Ala Val Asp His Tyr Leu Ser		
370	375	380
Glu Asn Gln Ile Ser Thr Val Asn Tyr His Gly Glu Val Pro Ala Glu		
385	390	395
Gln Arg Val Glu Asn Leu Lys Lys Phe Lys Asp Glu Glu Gly Asp Cys		
405	410	415
Pro Thr Leu Val Cys Thr Asp Leu Ala Ala Arg Gly Leu Asp Leu Asp		
420	425	430

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Val Asp His Val Val Met Phe Asp Phe Pro Lys Asn Ser Ile Asp Tyr  
 435 440 445

Leu His Arg Thr Gly Arg Thr Ala Arg Met Gly Ala Lys Gly Leu Phe  
 450 455 460

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gag ctc atg aaa gca ctt caa cct tat acc acc aac act gat tct tct 96  
 Glu Leu Met Lys Ala Leu Gln Pro Tyr Thr Thr Asn Thr Asp Ser Ser  
 20 25 30

tct cct acg tat tca aac aca gtc ttc ggt ttc aat caa acc aca tct 144  
 Ser Pro Thr Tyr Ser Asn Thr Val Phe Gly Phe Asn Gln Thr Thr Ser  
 35 40 45

ctc ggt cta aac cag ctc aca cct tac caa atc cac caa atc caa aac 192  
 Leu Gly Leu Asn Gln Leu Thr Pro Tyr Gln Ile His Gln Ile Gln Asn  
 50 55 60

cag ctt aac cag aga cgt aac ata atc tct cca aat cta gcc cca aag 240  
 Gln Leu Asn Gln Arg Arg Asn Ile Ile Ser Pro Asn Leu Ala Pro Lys  
 65 70 75 80

cct gtc cca atg aag aac atg acc gct cag aaa ctc tat aga gga gtt 288  
 Pro Val Pro Met Lys Asn Met Thr Ala Gln Lys Leu Tyr Arg Gly Val  
 85 90 95

aga caa agg cac tgg gga aaa tgg gta gct gag atc cgt tta ccc aag 336  
 Arg Gln Arg His Trp Gly Lys Trp Val Ala Glu Ile Arg Leu Pro Lys

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gcc atg gct tat gac cta gct gct tac aag cta aga ggc gag ttc gcg Ala Met Ala Tyr Asp Leu Ala Ala Tyr Lys Leu Arg Gly Glu Phe Ala 130 135 140			432
aga ctt aat ttc cca cag ttc aga cac gag gat gga tac tac gga gga Arg Leu Asn Phe Pro Gln Phe Arg His Glu Asp Gly Tyr Tyr Gly Gly 145 150 155 160			480
ggc agc tgt ttc aat cct ctt cat tcc tct gtc gac gca aag ctc caa Gly Ser Cys Phe Asn Pro Leu His Ser Ser Val Asp Ala Lys Leu Gln 165 170 175			528
gag att tgt cag agc ttg aga aaa aca gag gat att gac ctc ccc tgt Glu Ile Cys Gln Ser Leu Arg Lys Thr Glu Asp Ile Asp Leu Pro Cys 180 185 190			576
tct gaa aca gag ctt ttc ccg cca aaa aca gag tat caa gaa agt gaa Ser Glu Thr 195 Glu Leu Phe Pro 200 Lys Thr Glu Tyr 205 Glu Ser Glu			624
tat ggg ttc ttg aga tct gat gag aat tcg ttt tca gat gag tct cat Tyr Gly Phe Leu Arg Ser Asp Glu Asn Ser Phe Ser Asp Glu Ser His 210 215 220			672
gtg gaa tct tct tcg ccg gaa tct ggt att act acg ttc ttg gac ttt Val Glu Ser Ser Ser Pro Glu Ser Gly Ile Thr Thr Phe Leu Asp Phe 225 230 235 240			720
tcg gat tct gga ttt gat gag att ggg agt ttc ggg ctg gag aag ttt Ser Asp Ser Gly Phe Asp Glu Ile Gly Ser Phe Gly Leu Glu Lys Phe 245 250 255			768
cct tct gtg gag att gat tgg gat gcg att agc aaa ttg tcc gaa tct Pro Ser Val Glu Ile Asp Trp Asp Ala Ile Ser Lys Leu Ser Glu Ser 260 265 270			816
taa			819

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&lt;211&gt; 272

&lt;212&gt; PRT

&lt;213&gt; Arabidopsis thaliana

&lt;400&gt; 10

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Glu Leu Met Lys Ala Leu Gln Pro Tyr Thr Thr Asn Thr Asp Ser Ser  
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Ser Pro Thr Tyr Ser Asn Thr Val Phe Gly Phe Asn Gln Thr Thr Ser  
35 40 45

Leu Gly Leu Asn Gln Leu Thr Pro Tyr Gln Ile His Gln Ile Gln Asn  
50 55 60

Gln Leu Asn Gln Arg Arg Asn Ile Ile Ser Pro Asn Leu Ala Pro Lys  
65 70 75 80

Pro Val Pro Met Lys Asn Met Thr Ala Gln Lys Leu Tyr Arg Gly Val  
85 90 95

Arg Gln Arg His Trp Gly Lys Trp Val Ala Glu Ile Arg Leu Pro Lys  
100 105 110

Asn Arg Thr Arg Leu Trp Leu Gly Thr Phe Asp Thr Ala Glu Glu Ala  
115 120 125

Ala Met Ala Tyr Asp Leu Ala Ala Tyr Lys Leu Arg Gly Glu Phe Ala  
130 135 140

Arg Leu Asn Phe Pro Gln Phe Arg His Glu Asp Gly Tyr Tyr Gly Gly  
145 150 155 160

Gly Ser Cys Phe Asn Pro Leu His Ser Ser Val Asp Ala Lys Leu Gln  
165 170 175

Glu Ile Cys Gln Ser Leu Arg Lys Thr Glu Asp Ile Asp Leu Pro Cys  
180 185 190

Ser Glu Thr Glu Leu Phe Pro Pro Lys Thr Glu Tyr Gln Glu Ser Glu  
195 200 205

Tyr Gly Phe Leu Arg Ser Asp Glu Asn Ser Phe Ser Asp Glu Ser His  
210 215 220

Val Glu Ser Ser Ser Pro Glu Ser Gly Ile Thr Thr Phe Leu Asp Phe  
225 230 235 240

Ser Asp Ser Gly Phe Asp Glu Ile Gly Ser Phe Gly Leu Glu Lys Phe  
245 250 255

Pro Ser Val Glu Ile Asp Trp Asp Ala Ile Ser Lys Leu Ser Glu Ser  
260 265 270

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&lt;211&gt; 1476

&lt;212&gt; DNA

&lt;213&gt; Arabidopsis thaliana

&lt;220&gt;

&lt;221&gt; CDS

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&lt;400&gt; 11

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Ile	Arg	Arg	Tyr	Ser	Arg	Val	Ala	Pro	Pro	Pro	Ser	Ser	Val	Ile	Arg	
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gtg	aca	aac	aac	gta	gca	cac	ctg	gga	cca	ccg	aag	caa	gga	cca	ctg	144
Val	Thr	Asn	Asn	Val	Ala	His	Leu	Gly	Pro	Pro	Lys	Gln	Gly	Pro	Leu	
		35					40					45				

cca	cgt	cag	ctg	ata	tcc	ctg	ccg	cca	ttt	ccc	ggt	cat	cca	tta	cct	192
Pro	Arg	Gln	Leu	Ile	Ser	Leu	Pro	Pro	Phe	Pro	Gly	His	Pro	Leu	Pro	
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ggc	aaa	aac	gcc	gga	gct	gac	ggc	gac	gat	gga	gat	agc	ggc	ggc	cac	240
Gly	Lys	Asn	Ala	Gly	Ala	Asp	Gly	Asp	Asp	Gly	Asp	Ser	Gly	Gly	His	
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gtc	aca	gct	ata	agc	tgg	gtc	aag	tac	tat	ttt	gaa	gaa	atc	tat	gat	288
Val	Thr	Ala	Ile	Ser	Trp	Val	Lys	Tyr	Tyr	Phe	Glu	Glu	Ile	Tyr	Asp	
				85					90					95		

aag	gct	att	caa	act	cat	ttc	aca	aag	ggc	ctt	gtt	cag	atg	gag	ttt	336
Lys	Ala	Ile	Gln	Thr	His	Phe	Thr	Lys	Gly	Leu	Val	Gln	Met	Glu	Phe	
			100					105					110			

cga	ggt	cgt	agg	gat	gct	tca	aga	gag	aaa	gaa	gat	gga	gct	att	cct	384
Arg	Gly	Arg	Arg	Asp	Ala	Ser	Arg	Glu	Lys	Glu	Asp	Gly	Ala	Ile	Pro	
		115					120					125				

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Met	Arg	Lys	Ile	Lys	His	Asn	Glu	Val	Met	Gln	Ile	Gly	Asp	Lys	Ile	
	130					135					140					

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Trp	Leu	Pro	Val	Ser	Ile	Ala	Glu	Met	Arg	Ile	Ser	Lys	Arg	Tyr	Asp	
145				150					155						160	

acc	ata	cca	agt	gga	acc	ttg	tat	cca	aac	gca	gac	gaa	atc	gca	tat	528
Thr	Ile	Pro	Ser	Gly	Thr	Leu	Tyr	Pro	Asn	Ala	Asp	Glu	Ile	Ala	Tyr	
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aag Lys	cca Pro	cct Pro 195	aag Lys	ctt Leu	cca Pro	gtc Val	aag Lys 200	gga Gly	aat Asn	gtg Val	cct Pro	ata Ile 205	cat His	aat Asn	agc Ser	624
atg Met	gat Asp 210	gca Ala	ctt Leu	gca Ala	gct Ala	gca Ala 215	gct Ala	ttg Leu	tct Ser	ttt Phe	ggg Gly 220	aac Asn	gat Asp	gaa Glu	ggg Gly	672
cct Pro 225	aga Arg	ttg Leu	gta Val	aaa Lys	ctc Leu 230	act Thr	ttt Phe	ttg Leu	ggg Gly	gta Val 235	cat His	cgt Arg	ctt Leu	gat Asp	agg Arg 240	720
gaa Glu	act Thr	agt Ser	ggc Gly	ctc Leu 245	tta Leu	gta Val	atg Met	ggg Gly	cga Arg 250	acc Thr	aaa Lys	gaa Glu	agt Ser	ata Ile 255	gat Asp	768
tat Tyr	ctt Leu	cac His	tca Ser 260	gtg Val	ttc Phe	agt Ser	gac Asp	tac Tyr 265	aag Lys	ggg Gly	aga Arg	aac Asn	tca Ser 270	agc Ser	tgt Cys	816
aag Lys	gct Ala	tgg Trp 275	aac Asn	aaa Lys	gcg Ala	tgt Cys	gag Glu 280	gag Ala	atg Met	tat Tyr	cag Gln	caa Gln 285	tat Tyr	tgg Trp	gca Ala	864
ttg Leu	gtg Val 290	att Ile	ggg Gly	tct Ser	cca Pro	aag Lys 295	gaa Glu	aaa Lys	gaa Glu	gga Gly	cta Leu 300	att Ile	tca Ser	gct Ala	cct Pro	912
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gct Ala	caa Gln	ggg Gly	tcg Ser	ggc Gly 325	ttt Phe	gaa Glu	gct Ala	tcg Ser	caa Gln 330	gat Asp	gca Ala	ata Ile	aca Thr	gag Glu 335	tat Tyr	1008
aaa Lys	gtg Val	tta Leu	gga Gly 340	cct Pro	aag Lys	atc Ile	aac Asn	ggg Gly 345	tgt Cys	tcg Ser	tgg Trp	gta Val 350	gaa Glu	ctt Leu	cgt Arg	1056
cct Pro	att Ile	act Thr 355	agc Ser	aga Arg	aaa Lys	cat His	cag Gln 360	cca Pro	cct Pro	tct Ser	aaa Lys 365	aaa Gln	cag Gln	cta Leu	cgt Arg	1104
gta Val	cac His 370	tgc Cys	gct Ala	gaa Glu	gca Ala	ctt Leu 375	ggg Gly	act Thr	cca Pro	ata Ile	gta Val 380	ggg Gly	gat Asp	tac Tyr	aag Lys	1152
tac Tyr 385	ggg Gly	tgg Trp	ttt Phe	gtt Val	cac His 390	aag Lys	aga Arg	tgg Trp	aaa Lys	cag Gln 395	atg Met	cct Pro	cag Gln	gtt Val	gat Asp 400	1200
atc Ile	gaa Glu	cca Pro	act Thr 405	act Thr	ggg Gly	aaa Lys	cca Pro	tat Tyr	aaa Lys 410	ctg Leu	cgc Arg	aga Arg	cca Pro	gaa Glu 415	ggg Gly	1248
ctt Leu	gat Asp	gtc Val	caa Gln	aag Lys	gga Gly	agc Ser	gtt Val	ttg Leu	tca Ser	aaa Lys	gta Val	cct Pro	ttg Leu	tta Leu	cat His	1296

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Leu His Cys Arg Glu Met Val Leu Pro Asn Ile Ala Lys Phe Leu His			
	435	440	445
gtc atg aac caa cag gaa aca gag ccg ctt cac aca gga atc att gat			1392
Val Met Asn Gln Gln Glu Thr Glu Pro Leu His Thr Gly Ile Ile Asp			
	450	455	460
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Lys Pro Asp Leu Leu Arg Phe Val Ala Ser Met Pro Ser His Met Lys			
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Pro Arg Gln Leu Ile Ser Leu Pro Pro Phe Pro Gly His Pro Leu Pro	
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Gly Lys Asn Ala Gly Ala Asp Gly Asp Asp Gly Asp Ser Gly Gly His	
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Lys Ala Ile Gln Thr His Phe Thr Lys Gly Leu Val Gln Met Glu Phe	
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 Thr Ile Pro Ser Gly Thr Leu Tyr Pro Asn Ala Asp Glu Ile Ala Tyr  
 165 170 175  
 Leu Gln Arg Leu Val Arg Phe Lys Asp Ser Ala Ile Ile Val Leu Asn  
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 195 200 205  
 Met Asp Ala Leu Ala Ala Ala Ala Leu Ser Phe Gly Asn Asp Glu Gly  
 210 215 220  
 Pro Arg Leu Val Lys Leu Thr Phe Leu Gly Val His Arg Leu Asp Arg  
 225 230 235 240  
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 245 250 255  
 Tyr Leu His Ser Val Phe Ser Asp Tyr Lys Gly Arg Asn Ser Ser Cys  
 260 265 270  
 Lys Ala Trp Asn Lys Ala Cys Glu Ala Met Tyr Gln Gln Tyr Trp Ala  
 275 280 285  
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 Leu Ser Lys Val Leu Leu Asp Asp Gly Lys Thr Asp Arg Val Val Leu  
 305 310 315 320  
 Ala Gln Gly Ser Gly Phe Glu Ala Ser Gln Asp Ala Ile Thr Glu Tyr  
 325 330 335  
 Lys Val Leu Gly Pro Lys Ile Asn Gly Cys Ser Trp Val Glu Leu Arg  
 340 345 350  
 Pro Ile Thr Ser Arg Lys His Gln Pro Pro Ser Lys Lys Gln Leu Arg  
 355 360 365  
 Val His Cys Ala Glu Ala Leu Gly Thr Pro Ile Val Gly Asp Tyr Lys  
 370 375 380

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Tyr Gly Trp Phe Val His Lys Arg Trp Lys Gln Met Pro Gln Val Asp  
385 390 395 400

Ile Glu Pro Thr Thr Gly Lys Pro Tyr Lys Leu Arg Arg Pro Glu Gly  
405 410 415

Leu Asp Val Gln Lys Gly Ser Val Leu Ser Lys Val Pro Leu Leu His  
420 425 430

Leu His Cys Arg Glu Met Val Leu Pro Asn Ile Ala Lys Phe Leu His  
435 440 445

Val Met Asn Gln Gln Glu Thr Glu Pro Leu His Thr Gly Ile Ile Asp  
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Lys Pro Asp Leu Leu Arg Phe Val Ala Ser Met Pro Ser His Met Lys  
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ggt aac cgt ttc tac tct act tca gcc gaa gct agc cac gcg tcg tcg 96  
Gly Asn Arg Phe Tyr Ser Thr Ser Ala Glu Ala Ser His Ala Ser Ser  
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cct tcg ccg ttt ctt cac ggc ggc gga gct agc agg gtt gct ccg aaa 144  
Pro Ser Pro Phe Leu His Gly Gly Gly Ala Ser Arg Val Ala Pro Lys  
35 40 45

gat aga aat gtt cag tgg gtg ttt ttg gga tgt cct ggt gtt gga aaa 192  
Page 34

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Gly	Thr	Tyr	Ala	Ser	Arg	Leu	Ser	Thr	Leu	Leu	Gly	Val	Pro	His	Ile	
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gcc	acc	ggc	gat	ctc	gtc	cgt	gaa	gag	ctt	gca	tct	tct	gga	cct	ctc	288
Ala	Thr	Gly	Asp	Leu	Val	Arg	Glu	Glu	Leu	Ala	Ser	Ser	Gly	Pro	Leu	
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tct	caa	aag	cta	tcg	gag	att	gta	aat	cag	gga	aaa	ttg	gtt	tct	gat	336
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Glu	Ile	Ile	Val	Asp	Leu	Leu	Ser	Lys	Arg	Leu	Glu	Ala	Gly	Glu	Ala	
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Arg	Gly	Glu	Ser	Gly	Phe	Ile	Leu	Asp	Gly	Phe	Pro	Arg	Thr	Met	Arg	
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Leu	Lys	Leu	Pro	Glu	Glu	Val	Leu	Val	Asp	Lys	Cys	Leu	Gly	Arg	Arg	
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Thr	Cys	Ser	Gln	Cys	Gly	Lys	Gly	Phe	Asn	Val	Ala	His	Ile	Asn	Leu	
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Lys	Gly	Glu	Asn	Gly	Arg	Pro	Gly	Ile	Ser	Met	Asp	Pro	Leu	Leu	Pro	
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Pro	His	Gln	Cys	Met	Ser	Lys	Leu	Val	Thr	Arg	Ala	Asp	Asp	Thr	Glu	
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Pro	Gly	Gly	Ile	Pro	Glu	Ser	Trp	Pro	Arg	Leu	Leu	Glu	Ala	Leu	Arg	
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Asp Arg Asn Val Gln Trp Val Phe Leu Gly Cys Pro Gly Val Gly Lys  
50 55 60

Gly Thr Tyr Ala Ser Arg Leu Ser Thr Leu Leu Gly Val Pro His Ile  
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Ala Thr Gly Asp Leu Val Arg Glu Glu Leu Ala Ser Ser Gly Pro Leu  
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Ser Gln Lys Leu Ser Glu Ile Val Asn Gln Gly Lys Leu Val Ser Asp  
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Glu Ile Ile Val Asp Leu Leu Ser Lys Arg Leu Glu Ala Gly Glu Ala  
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Leu Lys Leu Pro Glu Glu Val Leu Val Asp Lys Cys Leu Gly Arg Arg  
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Thr Cys Ser Gln Cys Gly Lys Gly Phe Asn Val Ala His Ile Asn Leu  
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Lys Gly Glu Asn Gly Arg Pro Gly Ile Ser Met Asp Pro Leu Leu Pro  
195 200 205

Pro His Gln Cys Met Ser Lys Leu Val Thr Arg Ala Asp Asp Thr Glu  
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Val Asp Glu Thr Phe Leu Glu Lys Phe Gly Pro Lys Asp Lys Asp Thr	
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tgg gaa gag att ctc aca cca gaa gct gat ttc gct cgt aaa tct ctc	288
Trp Glu Glu Ile Leu Thr Pro Glu Ala Asp Phe Ala Arg Lys Ser Leu	
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Lys Asp Tyr Glu Asp Gly Met Tyr Glu Leu Pro Phe Tyr Tyr Pro Gly	
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Ala Thr Val Asp Lys Met Cys Leu Glu Arg Phe Lys Val Phe Leu Lys  
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Ser Tyr Lys Leu Asp Gln Asp Phe Tyr Pro Gly Arg Arg Lys Arg Gly  
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Lys Phe Asp Phe Pro Pro Ile Phe His Arg Asp Gly Asp Thr Asn Pro  
370 375 380

Asp Glu Ile Arg Arg Asp Cys Gly Arg Pro Pro Glu Pro Arg Lys Asp  
385 390 395 400

Pro Gly Ser Lys Pro Glu Glu Glu Gly Leu Leu Ser Asp His Pro Tyr  
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Asp Tyr Glu Ala Asn Pro Ala Lys Tyr Glu Gly Lys Lys Leu Ser Glu  
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gag	aac	ggg	act	aaa	ctt	cat	ata	ccc	gga	gca	aat	ctg	aat	gac	ata	624
Glu	Asn	Gly	Thr	Lys	Leu	His	Ile	Pro	Gly	Ala	Asn	Leu	Asn	Asp	Ile	
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gct	aat	caa	gct	gat	gac	ttg	cta	gag	act	atg	gaa	aca	agg	cca	gct	672
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 245 250 255  
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 Gly Phe Thr Thr Leu Pro Glu Ser Glu Val Asn Phe Leu Ala Lys Leu  
 260 265 270  
 gta gct ttg aaa cct gga aag act gtg cag cag atg atc cag aat gta 864  
 Val Ala Leu Lys Pro Gly Lys Thr Val Gln Gln Met Ile Gln Asn Val  
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 Met Gln Gly Lys Asp Glu Gly Ala Asp Asn Leu Ser Lys Glu Asp Asp  
 290 295 300  
 tct tct acc gaa gga aga aaa cca agt gga tta aat gga agg gga agc 960  
 Ser Ser Thr Glu Gly Arg Lys Pro Ser Gly Leu Asn Gly Arg Gly Ser  
 305 310 315 320  
 gtt aca gga aga aaa ccg tta cca gta aga cca gga atg ttt cta gaa 1008  
 Val Thr Gly Arg Lys Pro Leu Pro Val Arg Pro Gly Met Phe Leu Glu  
 325 330 335  
 act gtc aca aag gta ctg gga agt ata tac tcg ggt aat gcc tcc ggg 1056  
 Thr Val Thr Lys Val Leu Gly Ser Ile Tyr Ser Gly Asn Ala Ser Gly  
 340 345 350  
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&lt;210&gt; 18

&lt;211&gt; 364

&lt;212&gt; PRT

&lt;213&gt; Arabidopsis thaliana

&lt;400&gt; 18

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 Lys Arg Glu Ser Leu Ile Ile Pro Ser Val Ile Cys Ser Phe Pro Phe  
 20 25 30  
 Thr Ser Ser Ser Phe Arg Pro Lys Gln Thr Gln Lys Leu Lys Arg Leu  
 35 40 45  
 Val Gln Phe Cys Ala Pro Tyr Glu Val Gly Gly Gly Tyr Thr Asp Glu  
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50

55

60

Glu Leu Phe Glu Arg Tyr Gly Thr Gln Gln Asn Gln Thr Asn Val Lys  
65 70 75 80

Asp Lys Leu Asp Pro Ala Glu Tyr Glu Ala Leu Leu Lys Gly Gly Glu  
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Gln Val Thr Ser Val Leu Glu Glu Met Ile Thr Leu Leu Glu Asp Met  
100 105 110

Lys Met Asn Glu Ala Ser Glu Asn Val Ala Val Glu Leu Ala Ala Gln  
115 120 125

Gly Val Ile Gly Lys Arg Val Asp Glu Met Glu Ser Gly Phe Met Met  
130 135 140

Ala Leu Asp Tyr Met Ile Gln Leu Ala Asp Lys Asp Gln Asp Glu Lys  
145 150 155 160

Val Gln Val Ile Gly Leu Leu Cys Arg Thr Pro Lys Lys Glu Ser Arg  
165 170 175

His Glu Leu Leu Arg Arg Val Ala Ala Gly Gly Gly Ala Phe Glu Ser  
180 185 190

Glu Asn Gly Thr Lys Leu His Ile Pro Gly Ala Asn Leu Asn Asp Ile  
195 200 205

Ala Asn Gln Ala Asp Asp Leu Leu Glu Thr Met Glu Thr Arg Pro Ala  
210 215 220

Ile Pro Asp Arg Lys Leu Leu Ala Arg Leu Val Leu Ile Arg Glu Glu  
225 230 235 240

Ala Arg Asn Met Met Gly Gly Gly Ile Leu Asp Glu Arg Asn Asp Arg  
245 250 255

Gly Phe Thr Thr Leu Pro Glu Ser Glu Val Asn Phe Leu Ala Lys Leu  
260 265 270

Val Ala Leu Lys Pro Gly Lys Thr Val Gln Gln Met Ile Gln Asn Val  
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Met Gln Gly Lys Asp Glu Gly Ala Asp Asn Leu Ser Lys Glu Asp Asp  
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Ser Ser Thr Glu Gly Arg Lys Pro Ser Gly Leu Asn Gly Arg Gly Ser  
305 310 315 320

Val Thr Gly Arg Lys Pro Leu Pro Val Arg Pro Gly Met Phe Leu Glu  
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agc aac aac gca aag cca cgg att cat agt tca gga tcg ctc ggc gga	96
Ser Asn Asn Ala Lys Pro Arg Ile His Ser Ser Gly Ser Leu Gly Gly	
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atc aaa agc caa aat aga gtc tct cca ttg agt gcg gtt gga tta agc	144
Ile Lys Ser Gln Asn Arg Val Ser Pro Leu Ser Ala Val Gly Leu Ser	
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tca ggc ctt gga agt aga agg aaa tct ctt ttg ata tgt cac tca gcc	192
Ser Gly Leu Gly Ser Arg Arg Lys Ser Leu Leu Ile Cys His Ser Ala	
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att aac gcg aaa tgc agt gaa gga caa aca cag acc gtt act cgg gag	240
Ile Asn Ala Lys Cys Ser Glu Gly Gln Thr Gln Thr Val Thr Arg Glu	
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tca ccg act ata aca cag gct cct gta cac tct aag gag aaa tca cca	288
Ser Pro Thr Ile Thr Gln Ala Pro Val His Ser Lys Glu Lys Ser Pro	
85 90 95	

agc cta gac gat gga gga gac ggg ttc cca ccg cga gat gat gga gat	336
Ser Leu Asp Asp Gly Gly Asp Gly Phe Pro Pro Arg Asp Asp Gly Asp	

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ggt ggt gga gga gga ggg ggt gga ggc aac tgg tcg ggt ggg ttc ttc			384
Gly Gly Gly Gly Gly Gly Gly Gly Gly Asn Trp Ser Gly Gly Phe Phe			
115	120	125	
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Phe Phe Gly Phe Leu Ala Phe Leu Gly Leu Leu Lys Asp Lys Glu Gly			
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<212> PRT

<213> Arabidopsis thaliana

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Ser	Gly	Leu	Gly	Ser	Arg	Arg	Lys	Ser	Leu	Leu	Ile	Cys	His	Ser	Ala
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Ile	Asn	Ala	Lys	Cys	Ser	Glu	Gly	Gln	Thr	Gln	Thr	Val	Thr	Arg	Glu
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Ser	Pro	Thr	Ile	Thr	Gln	Ala	Pro	Val	His	Ser	Lys	Glu	Lys	Ser	Pro
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Ser	Leu	Asp	Asp	Gly	Gly	Asp	Gly	Phe	Pro	Pro	Arg	Asp	Asp	Gly	Asp
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Gly	Gly	Gly	Gly	Gly	Gly	Gly	Gly	Gly	Asn	Trp	Ser	Gly	Gly	Phe	Phe
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tcg	ttg	cgt	aac	att	tct	cta	gca	gat	tta	gat	cca	gga	aca	gcg	aag	240
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ctc	gct	att	ggt	atc	tta	ggt	cca	gct	tta	tca	gct	ttt	gga	ttt	cta	288
Leu	Ala	Ile	Gly	Ile	Leu	Gly	Pro	Ala	Leu	Ser	Ala	Phe	Gly	Phe	Leu	
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Phe	Ile	Leu	Arg	Ile	Val	Met	Ser	Trp	Tyr	Pro	Lys	Leu	Pro	Val	Asp	
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Lys	Phe	Pro	Tyr	Val	Leu	Ala	Tyr	Ala	Pro	Thr	Glu	Pro	Ile	Leu	Val	
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cag	aca	agg	aaa	gtg	att	cca	cca	ctt	gca	ggt	gtt	gat	gtt	act	cct	432
Gln	Thr	Arg	Lys	Val	Ile	Pro	Pro	Leu	Ala	Gly	Val	Asp	Val	Thr	Pro	
	130					135					140					

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Tyr Ala Pro Ala Ala Met Ala Ala Val Glu Phe Ala Thr Ala Ala Ala	180	185	190	
gcc tgc ggt gat gaa acg aac aga cta att ata atc gag tcg aga ttc				624
Ala Cys Gly Asp Glu Thr Asn Arg Leu Ile Ile Ile Glu Ser Arg Phe	195	200	205	
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Phe Lys Ala Ile Tyr	210			

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Ala Ala Thr Thr Thr Asn Leu Ile Arg Gln Thr Asn Ser Ile Ser Glu	50	55	60	
Ser Leu Arg Asn Ile Ser Leu Ala Asp Leu Asp Pro Gly Thr Ala Lys	65	70	75	80
Leu Ala Ile Gly Ile Leu Gly Pro Ala Leu Ser Ala Phe Gly Phe Leu	85	90	95	
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Lys Phe Pro Tyr Val Leu Ala Tyr Ala Pro Thr Glu Pro Ile Leu Val	115	120	125	



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Gln Thr Arg Lys Val Ile Pro Pro Leu Ala Gly Val Asp Val Thr Pro  
130 135 140

Val Val Trp Phe Gly Leu Val Val Ala Ala Ala Asp Ala Tyr Glu  
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Tyr Ala Pro Ala Ala Met Ala Ala Val Glu Phe Ala Thr Ala Ala Ala  
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Arg	Gln	Asn	Arg	Leu	Leu	Ser	Ser	Ser	Ser	Phe	Trp	Gly	Thr	Lys	Phe	
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gga	aac	acc	gtc	aag	ttg	gga	gta	tct	gga	tgt	agt	agc	tgc	tct	cgg	192
Gly	Asn	Thr	Val	Lys	Leu	Gly	Val	Ser	Gly	Cys	Ser	Ser	Cys	Ser	Arg	
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tcc	atc	gtc	gca	tcc	gtt	aat	cgc	ttg	gag	act	gag	att	tcg	gct	ctt	336			
Ser	Ile	Val	Ala	Ser	Val	Asn	Arg	Leu	Glu	Thr	Glu	Ile	Ser	Ala	Leu				
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Ser	Asp	Ser	Glu	Leu	Arg	Glu	Arg	Thr	Asp	Ala	Leu	Lys	Gln	Arg	Ala				
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Leu	Leu	Thr	Glu	Gln	Gly	Tyr	Glu	Asp	Ala	Glu	Glu	Ile	Leu	Asp	Val	
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Gln	Gly	Arg	Arg	Trp	Ser	Asp	Gly	Leu	His	Gln	Ala	Val	Glu	Ala	Lys	
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gaa	ggc	ttg	cct	att	cag	aat	gaa	tct	att	act	ctg	gcg	tca	att	agt	1296
Glu	Gly	Leu	Pro	Ile	Gln	Asn	Glu	Ser	Ile	Thr	Leu	Ala	Ser	Ile	Ser	
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Tyr	Gln	Asn	Phe	Phe	Leu	Gln	Phe	Pro	Lys	Leu	Cys	Gly	Met	Thr	Gly	
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Val	Thr	Ile	Val	Pro	Thr	Asn	Lys	Pro	Met	Ile	Arg	Lys	Asp	Glu	Ser	
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Asp	Val	Val	Phe	Lys	Ala	Val	Asn	Gly	Lys	Trp	Arg	Ala	Val	Val	Val	
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gag	atc	tct	aga	atg	cac	aag	aca	ggg	agg	gct	gtg	cta	gtt	ggc	aca	1536
Glu	Ile	Ser	Arg	Met	His	Lys	Thr	Gly	Arg	Ala	Val	Leu	Val	Gly	Thr	
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Thr	Ser	Val	Glu	Gln	Ser	Asp	Glu	Leu	Ser	Gln	Leu	Leu	Arg	Glu	Ala	
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Glu	Ala	Glu	Ile	Val	Ala	Gln	Ser	Gly	Arg	Leu	Gly	Ala	Val	Thr	Ile	
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Ala	Thr	Asn	Met	Ala	Gly	Arg	Gly	Thr	Asp	Ile	Ile	Leu	Gly	Gly	Asn	
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aca gag cgg cat gaa tca cgt cga ata gac aat cag ttg cgt ggg cga Thr Glu Arg His Glu Ser Arg Arg Ile Asp Asn Gln Leu Arg Gly Arg 705 710 715 720	2160
agt ggc cgg caa ggg gat cct gga agt tcc cga ttc ttc ctt agt ctt Ser Gly Arg Gln Gly Asp Pro Gly Ser Ser Arg Phe Phe Leu Ser Leu 725 730 735	2208
gaa gat aac ata ttc cgc att ttt ggt gga gat cgg att cag ggt atg Glu Asp Asn Ile Phe Arg Ile Phe Gly Gly Asp Arg Ile Gln Gly Met 740 745 750	2256
atg agg gca ttc agg gtg gaa gat tta ccg atc gaa tcc aag atg ctt Met Arg Ala Phe Arg Val Glu Asp Leu Pro Ile Glu Ser Lys Met Leu 755 760 765	2304
act aaa gct cta gat gaa gct cag aga aaa gtt gag aat tac ttc ttt Thr Lys Ala Leu Asp Glu Ala Gln Arg Lys Val Glu Asn Tyr Phe Phe 770 775 780	2352
gac atc aga aag caa tta ttc gaa ttt gac gag gtt ctc aat agc caa Asp Ile Arg Lys Gln Leu Phe Glu Phe Asp Glu Val Leu Asn Ser Gln 785 790 795 800	2400
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ctt gag cct ctg att atc gag tat gct gaa ttg aca atg gat gac att Leu Glu Pro Leu Ile Ile Glu Tyr Ala Glu Leu Thr Met Asp Asp Ile 820 825 830	2496

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ctc act ccc gat ttg ctg aaa agc gaa gga tca agt tat gaa ggg ttg Leu Thr Pro Asp Leu Leu Lys Ser Glu Gly Ser Ser Tyr Glu Gly Leu 865 870 875 880	2640
caa gat tat ctc cgt gcc cgt ggc cgc gat gca tac tta cag aaa aga Gln Asp Tyr Leu Arg Ala Arg Gly Arg Asp Ala Tyr Leu Gln Lys Arg 885 890 895	2688
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gca ctc aag ttc gtg caa caa gct gtg ggg ctc aga gga tat gcg caa Ala Leu Lys Phe Val Gln Gln Ala Val Gly Leu Arg Gly Tyr Ala Gln 930 935 940	2832
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 Lys Arg Ser Thr Ser Val Asn Ala Ser Leu Gly Gly Leu Leu Ser Gly  
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 Gln Lys Gly Glu Ser Met Asp Ser Leu Leu Pro Glu Ala Phe Ala Val  
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 Val Arg Glu Ala Ser Lys Arg Val Leu Gly Leu Arg Pro Phe Asp Val  
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 Gln Leu Ile Gly Gly Met Val Leu His Lys Gly Glu Ile Ala Glu Met  
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 Arg Thr Gly Glu Gly Lys Thr Leu Val Ala Ile Leu Pro Ala Tyr Leu  
                     180                      185                      190  
 Asn Ala Leu Ser Gly Lys Gly Val His Val Val Thr Val Asn Asp Tyr  
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 Gly Leu Lys Val Gly Leu Ile Gln Gln Asn Met Thr Pro Glu Gln Arg  
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 Lys Glu Asn Tyr Leu Cys Asp Ile Thr Tyr Val Thr Asn Ser Glu Leu  
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Glu Lys Pro Ser Asp Gln Tyr Tyr Lys Ala Ala Lys Ile Ala Ser Ala  
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Phe Glu Arg Asp Ile His Tyr Thr Val Asp Glu Lys Gln Lys Thr Val  
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Leu Leu Thr Glu Gln Gly Tyr Glu Asp Ala Glu Glu Ile Leu Asp Val  
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Lys Asp Leu Tyr Asp Pro Arg Glu Gln Trp Ala Ser Tyr Val Leu Asn  
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Ala Ile Lys Ala Lys Glu Leu Phe Leu Arg Asp Val Asn Tyr Ile Ile  
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Arg Ala Lys Glu Val Leu Ile Val Asp Glu Phe Thr Gly Arg Val Met  
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Gln Gly Arg Arg Trp Ser Asp Gly Leu His Gln Ala Val Glu Ala Lys  
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Glu Gly Leu Pro Ile Gln Asn Glu Ser Ile Thr Leu Ala Ser Ile Ser  
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Tyr Gln Asn Phe Phe Leu Gln Phe Pro Lys Leu Cys Gly Met Thr Gly  
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Thr Ala Ser Thr Glu Ser Ala Glu Phe Glu Ser Ile Tyr Lys Leu Lys  
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Glu Ile Ser Arg Met His Lys Thr Gly Arg Ala Val Leu Val Gly Thr  
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Ala Thr Asn Met Ala Gly Arg Gly Thr Asp Ile Ile Leu Gly Gly Asn  
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Ala Glu Phe Met Ala Arg Leu Lys Leu Arg Glu Ile Leu Met Pro Arg  
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Val Val Lys Pro Thr Asp Gly Val Phe Val Ser Val Lys Lys Ala Pro  
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Pro Lys Arg Thr Trp Lys Val Asn Glu Lys Leu Phe Pro Cys Lys Leu  
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Glu Ala Trp Gly Gln Lys Ser Leu Thr Glu Leu Glu Ala Glu Glu Arg  
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Ser Gly Arg Gln Gly Asp Pro Gly Ser Ser Arg Phe Phe Leu Ser Leu  
725 730 735

Glu Asp Asn Ile Phe Arg Ile Phe Gly Gly Asp Arg Ile Gln Gly Met  
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Met Arg Ala Phe Arg Val Glu Asp Leu Pro Ile Glu Ser Lys Met Leu  
755 760 765



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 Arg Asp Arg Val Tyr Thr Glu Arg Arg Arg Ala Leu Val Ser Asp Ser  
 805 810 815  
 Leu Glu Pro Leu Ile Ile Glu Tyr Ala Glu Leu Thr Met Asp Asp Ile  
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 945 950 955 960  
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Phe Arg Cys Arg Thr Tyr Ile Phe Ser Phe Ser Ser Ser Pro Leu Cys	
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Leu Tyr Phe Pro Arg Gly Asp Ser Thr Ser Leu Arg Pro Arg Val Arg	
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gcc ttg cga acg gaa tct gac ggt gct aaa atc ggt aac tcg gag tct	192
Ala Leu Arg Thr Glu Ser Asp Gly Ala Lys Ile Gly Asn Ser Glu Ser	
50 55 60	

tac ggc tcc gaa ttg ctt cgt cgg cct cgt att gcg tcg gag gaa agc	240
Tyr Gly Ser Glu Leu Leu Arg Arg Pro Arg Ile Ala Ser Glu Glu Ser	
65 70 75 80	

tcc gaa gaa gag gag gaa gag gaa gaa gag aac agc gaa ggt gat gag	288
Ser Glu Glu Glu Glu Glu Glu Glu Glu Glu Asn Ser Glu Gly Asp Glu	
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ttc gtc gat tgg gaa gat aaa atc ctt gag gtt act gtt cct ctt gtt	336
Phe Val Asp Trp Glu Asp Lys Ile Leu Glu Val Thr Val Pro Leu Val	
100 105 110	

ggc ttc gtc aga atg att ctt cac tcc gga aaa tat gca aac cga gat	384
Gly Phe Val Arg Met Ile Leu His Ser Gly Lys Tyr Ala Asn Arg Asp	
115 120 125	

agg cta agc ccc gag cat gag aga aca att att gag atg cta ctt cct	432
Arg Leu Ser Pro Glu His Glu Arg Thr Ile Ile Glu Met Leu Leu Pro	
130 135 140	

tat cat cct gaa tgt gag aag aag atc gga tgt ggt ata gac tat att	480
Tyr His Pro Glu Cys Glu Lys Lys Ile Gly Cys Gly Ile Asp Tyr Ile	
145 150 155 160	

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Met Val Gly His His Pro Asp Phe Glu Ser Ser Arg Cys Met Phe Ile  
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gtt cga aaa gat gga gaa gta gtc gac ttt tcg tat tgg aaa tgc ata 576  
Val Arg Lys Asp Gly Glu Val Val Asp Phe Ser Tyr Trp Lys Cys Ile  
180 185 190

aaa ggt ctt ata aaa aag aag tat cct ctg tat gca gac agt ttc atc 624  
Lys Gly Leu Ile Lys Lys Lys Tyr Pro Leu Tyr Ala Asp Ser Phe Ile  
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35 40 45

Ala Leu Arg Thr Glu Ser Asp Gly Ala Lys Ile Gly Asn Ser Glu Ser  
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Tyr Gly Ser Glu Leu Leu Arg Arg Pro Arg Ile Ala Ser Glu Glu Ser  
65 70 75 80

ser Glu Glu Glu Glu Glu Glu Glu Glu Asn Ser Glu Gly Asp Glu  
85 90 95

Phe Val Asp Trp Glu Asp Lys Ile Leu Glu Val Thr Val Pro Leu Val  
100 105 110

Gly Phe Val Arg Met Ile Leu His Ser Gly Lys Tyr Ala Asn Arg Asp  
115 120 125

Arg Leu Ser Pro Glu His Glu Arg Thr Ile Ile Glu Met Leu Leu Pro  
Page 59

130

135

Tyr His Pro Glu Cys Glu Lys Lys Ile Gly Cys Gly Ile Asp Tyr Ile  
145 150 155 160

Met Val Gly His His Pro Asp Phe Glu Ser Ser Arg Cys Met Phe Ile  
165 170 175

Val Arg Lys Asp Gly Glu Val Val Asp Phe Ser Tyr Trp Lys Cys Ile  
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aag ctc cgt ttc tcc gcc gat cat ctg act ttt acc acc gtg aca gaa 96  
Lys Leu Arg Phe Ser Ala Asp His Leu Thr Phe Thr Thr Val Thr Glu  
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aaa ttg aga gca acg gct tgg aga ttt gct ttc tca tcc aga gct aag 144  
Lys Leu Arg Ala Thr Ala Trp Arg Phe Ala Phe Ser Ser Arg Ala Lys  
35 40 45

tcc gtg gta gca atg gca gct aat gaa gaa ttt acg gga aat ctg aaa 192  
Ser Val Val Ala Met Ala Ala Asn Glu Glu Phe Thr Gly Asn Leu Lys  
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cgt caa ctc gcg aag ctc ttt gat gtt tct cta aaa tta acg gtt cct 240  
Arg Gln Leu Ala Lys Leu Phe Asp Val Ser Leu Lys Leu Thr Val Pro  
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aaa gga aag ggt act cag ttc aag ggt cct cca gct gtt gga cag gcc Lys Gly Lys Gly Thr Gln Phe Lys Gly Pro Pro Ala Val Gly Gln Ala 115 120 125	384
ctt gtt aag agt ctc cct act tct gag atg gta gaa tca tgc tct gta Leu Val Lys Ser Leu Pro Thr Ser Glu Met Val Glu Ser Cys Ser Val 130 135 140	432
gct gga cct ggc ttt att aat gtt gta cta tca gct aag tgg atg gct Ala Gly Pro Gly Phe Ile Asn Val Val Leu Ser Ala Lys Trp Met Ala 145 150 155 160	480
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act ctt tcg gtt aag aga gct gta gtt gat ttt tcc tct ccc aac att Thr Leu Ser Val Lys Arg Ala Val Val Asp Phe Ser Ser Pro Asn Ile 180 185 190	576
gca aaa gaa atg cat gtt ggt cat cta aga tca act atc att ggt gac Ala Lys Glu Met His Val Gly His Leu Arg Ser Thr Ile Ile Gly Asp 195 200 205	624
act cta gct cgc atg ctc gag tac tca cat gtt gaa gtt cta cgc aga Thr Leu Ala Arg Met Leu Glu Tyr Ser His Val Glu Val Leu Arg Arg 210 215 220	672
aac cat gtt ggt gac tgg gga aca cag ttt ggc atg cta att gag tac Asn His Val Gly Asp Trp Gly Thr Gln Phe Gly Met Leu Ile Glu Tyr 225 230 235 240	720
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Gly	Phe	Gly	Leu	Val	Leu	Gly	Glu	Asp	Gly	Lys	Arg	Phe	Arg	Thr	Arg	
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Lys	Leu	Arg	Ala	Thr	Ala	Trp	Arg	Phe	Ala	Phe	Ser	Ser	Arg	Ala	Lys		
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Phe	Gly	Asp	Tyr	Gln	Cys	Asn	Asn	Ala	Met	Gly	Leu	Trp	Ser	Ile	Ile		
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 Ala Lys Glu Met His Val Gly His Leu Arg Ser Thr Ile Ile Gly Asp  
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 Leu Phe Glu Lys Phe Pro Asp Thr Asp Ser Val Thr Glu Thr Ala Ile  
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 Asp Glu Ala Phe Lys Glu Lys Ala Gln Gln Ala Val Val Arg Leu Gln  
 275 280 285  
 Gly Gly Asp Pro Val Tyr Arg Lys Ala Trp Ala Lys Ile Cys Asp Ile  
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 Ser Arg Thr Glu Phe Ala Lys Val Tyr Gln Arg Leu Arg Val Glu Leu  
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 Glu Glu Lys Gly Glu Ser Phe Tyr Asn Pro His Ile Ala Lys Val Ile  
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 Glu Glu Leu Asn Ser Lys Gly Leu Val Glu Glu Ser Glu Gly Ala Arg  
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 Val Ile Phe Leu Glu Gly Phe Asp Ile Pro Leu Met Val Val Lys Ser  
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 Asp Gly Gly Phe Asn Tyr Ala Ser Thr Asp Leu Thr Ala Leu Trp Tyr  
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Arg Leu Asn Glu Glu Lys Ala Glu Trp Ile Ile Tyr Val Thr Asp Val  
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 Gly Trp Leu Pro Asp Asn Asp Lys Thr Tyr Pro Arg Val Asn His Val  
 420 425 430  
 Gly Phe Gly Leu Val Leu Gly Glu Asp Gly Lys Arg Phe Arg Thr Arg  
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 Ala Thr Asp Val Val Arg Leu Val Asp Leu Leu Asp Glu Ala Lys Thr  
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 Pro Glu Glu Leu Asp Gln Thr Ala Glu Ala Val Gly Tyr Gly Ala Val  
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 Tyr Ala His Ala Arg Ile Cys Ser Ile Ile Arg Lys Ser Gly Lys Asp  
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 Ile Asp Glu Leu Lys Lys Thr Gly Lys Leu Ala Leu Asp His Ala Asp  
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 Glu Ala Cys Thr Asn Leu Leu Pro Ser Val Leu Cys Glu Tyr Leu Tyr  
 580 585 590  
 Asn Leu Ser Glu His Phe Thr Arg Phe Tyr Ser Asn Cys Gln Val Asn  
 595 600 605  
 Gly Ser Pro Glu Glu Thr Ser Arg Leu Leu Leu Cys Glu Ala Thr Ala  
 610 615 620  
 Ile Val Met Arg Lys Cys Phe His Leu Leu Gly Ile Thr Pro Val Tyr  
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625

630

635

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Ser Leu Gln Phe Leu Cys Lys Lys Leu Pro Ile Ala Ile His Leu Pro	
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tca tct tct tcc tct agc ttt ctc tcg ctt cct aaa acc cta acc tct	144
Ser Ser Ser Ser Ser Ser Phe Leu Ser Leu Pro Lys Thr Leu Thr Ser	
35 40 45	

ctc tat tct ctc cgt ccc cgt atc gcc cta ctc tca aac cac cgc tat	192
Leu Tyr Ser Leu Arg Pro Arg Ile Ala Leu Leu Ser Asn His Arg Tyr	
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tac cac tct cgc cgg ttt tct gtt tgt gcc agt acc gat aat gga gct	240
Tyr His Ser Arg Arg Phe Ser Val Cys Ala Ser Thr Asp Asn Gly Ala	
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Glu Ser Asp Arg His Tyr Asp Phe Asp Leu Phe Thr Ile Gly Ala Gly	
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gcc gcc gtt tgc gag ctt cct ttt tcc act atc tct tcc gat act gct	384
Ala Ala Val Cys Glu Leu Pro Phe Ser Thr Ile Ser Ser Asp Thr Ala	
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gga ggc gtt gga gga acg tgt gta ttg aga gga tgt gta cca aag aag	432
Gly Gly Val Gly Gly Thr Cys Val Leu Arg Gly Cys Val Pro Lys Lys	
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gga Gly	ttt Phe	ggt Gly	tgg Trp	aag Lys 165	tat Tyr	gag Glu	act Thr	gag Glu	cct Pro 170	tct Ser	cat His	gat Asp	tgg Trp	act Thr 175	528	
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aag Lys	aat Asn	ata Ile 195	ctg Leu	agc Ser	aaa Lys	gct Ala	aat Asn 200	gtc Val	aag Lys	ttg Leu	att Ile	gaa Glu 205	ggt Gly	cgt Arg	gga Gly	624
aag Lys	gtt Val 210	ata Ile	gac Asp	cca Pro	cac His	act Thr 215	gtt Val	gat Asp	gta Val	gat Asp	ggg Gly 220	aaa Lys	atc Ile	tat Tyr	act Thr	672
acg Thr 225	agg Arg	aat Asn	att Ile	ctg Leu	att Ile 230	gca Ala	gtt Val	ggt Gly	gga Gly	cgt Arg 235	cct Pro	ttc Phe	att Ile	cct Pro	gac Asp 240	720
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ctg Leu	gag Glu	ttt Phe 275	gcg Ala	ggg Gly	atc Ile	ttc Phe	aat Asn 280	ggt Gly	ctt Leu	aac Asn	tgt Cys	gaa Glu 285	gtt Val	cat His	gta Val	864
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ctg Leu	aag Lys	acc Thr	agc Ser 340	aag Lys	gga Gly	act Thr	gtt Val	gag Glu 345	gga Gly	ttt Phe	tcg Ser	cat His	gtt Val 350	atg Met	ttt Phe	1056
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ggc Gly	gtt Val 370	aaa Lys	atg Met	gcg Ala	aaa Lys	aat Asn 375	gga Gly	gca Ala	ata Ile	gag Glu	gtt Val 380	gac Asp	gaa Glu	tat Tyr	tca Ser	1152
cag Gln	aca Thr	tct Ser	gtt Val	cca Pro	tcc Ser	atc Ile	tgg Trp	gct Ala	gtt Val	ggg Gly	gat Asp	gtt Val	act Thr	gac Asp	cga Arg	1200

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Thr Leu Phe Gln Asn Glu Pro Thr Lys Pro Asp Tyr Arg Ala Val Pro	420	425	430	
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Cys Ala Val Phe Ser Gln Pro Pro Ile Gly Thr Val Gly Leu Thr Glu	435	440	445	
gag cag gcc ata gaa caa tat ggt gat gtg gat gtt tac aca tcg aac				1392
Glu Gln Ala Ile Glu Gln Tyr Gly Asp Val Asp Val Tyr Thr Ser Asn	450	455	460	
ttt agg cca tta aag gct acc ctt tca gga ctt cca gac cga gta ttt				1440
Phe Arg Pro Leu Lys Ala Thr Leu Ser Gly Leu Pro Asp Arg Val Phe	465	470	475	480
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Met Lys Leu Ile Val Cys Ala Asn Thr Asn Lys Val Leu Gly Val His	485	490	495	
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Met Cys Gly Glu Asp Ser Pro Glu Ile Ile Gln Gly Phe Gly Val Ala	500	505	510	
gtt aaa gct ggt tta act aag gcc gac ttt gat gct aca gtg ggt gtt				1584
Val Lys Ala Gly Leu Thr Lys Ala Asp Phe Asp Ala Thr Val Gly Val	515	520	525	
cac ccc aca gca gct gag gag ttt gtc act atg agg gct cca acc agg				1632
His Pro Thr Ala Ala Glu Glu Phe Val Thr Met Arg Ala Pro Thr Arg	530	535	540	
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Tyr His Ser Arg Arg Phe Ser Val Cys Ala Ser Thr Asp Asn Gly Ala  
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Ser Gly Gly Val Arg Ala Ser Arg Phe Ala Thr Ser Phe Gly Ala Ser  
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Ala Ala Val Cys Glu Leu Pro Phe Ser Thr Ile Ser Ser Asp Thr Ala  
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Leu Leu Val Tyr Ala Ser Lys Tyr Ser His Glu Phe Glu Asp Ser His  
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Gly Phe Gly Trp Lys Tyr Glu Thr Glu Pro Ser His Asp Trp Thr Thr  
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Leu Ile Ala Asn Lys Asn Ala Glu Leu Gln Arg Leu Thr Gly Ile Tyr  
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Lys Asn Ile Leu Ser Lys Ala Asn Val Lys Leu Ile Glu Gly Arg Gly  
 195 200 205

Lys Val Ile Asp Pro His Thr Val Asp Val Asp Gly Lys Ile Tyr Thr  
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Thr Arg Asn Ile Leu Ile Ala Val Gly Gly Arg Pro Phe Ile Pro Asp  
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Ile Pro Gly Lys Glu Phe Ala Ile Asp Ser Asp Ala Ala Leu Asp Leu  
 245 250 255

Pro Ser Lys Pro Lys Lys Ile Ala Ile Val Gly Gly Gly Tyr Ile Ala  
 260 265 270

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Leu Glu Phe Ala Gly Ile Phe Asn Gly Leu Asn Cys Glu Val His Val  
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Glu Glu Ser Pro Glu Ala Ile Ile Lys Ala Gly Asp Gly Ser Phe Ser  
325 330 335

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Gly Val Lys Met Ala Lys Asn Gly Ala Ile Glu Val Asp Glu Tyr Ser  
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Gln Thr Ser Val Pro Ser Ile Trp Ala Val Gly Asp Val Thr Asp Arg  
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Ile Asn Leu Thr Pro Val Ala Leu Met Glu Gly Gly Ala Leu Ala Lys  
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Cys Ala Val Phe Ser Gln Pro Pro Ile Gly Thr Val Gly Leu Thr Glu  
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Phe Arg Pro Leu Lys Ala Thr Leu Ser Gly Leu Pro Asp Arg Val Phe  
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Met Lys Leu Ile Val Cys Ala Asn Thr Asn Lys Val Leu Gly Val His  
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Val Lys Ala Gly Leu Thr Lys Ala Asp Phe Asp Ala Thr Val Gly Val  
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20 25 30	
tca gtc ttc ttc caa ccg caa tgt gca gta tcc act tca ccg gcg tta	144
Ser Val Phe Phe Gln Pro Gln Cys Ala Val Ser Thr Ser Pro Ala Leu	
35 40 45	
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85 90 95	
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Glu Thr Leu Leu Thr Ser Asp Glu Ala Val Val Val Ala Ala Ala Ala	
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		115					120					125					
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Lys	Ile	Thr	Ala	Ser	Ala	Ser	Asn	Lys	Glu	Ser	Ile	Gly	Asp	Leu	Glu		
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Gly	Ser	Ser	Pro	Lys	Lys	Lys	Arg	Leu	Val	Ala	Gln	Glu	Val	Asp	His		
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	290					295					300						
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Gln	Pro	Thr	Phe	Ala	Gln	Trp	Ala	Ser	Ala	Ala	Gly	Val	Asp	Gln	Lys		
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Ile	Lys	Ser	Asn	Ile	Arg	Leu	Val	Ile	Ser	Ile	Ala	Lys	Asn	Tyr	Gln		
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 35 40 45

Leu Thr Ser Met Leu Asp Val Ala Lys Leu Arg Leu Pro Ser Phe Asp  
 50 55 60

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 65 70 75 80

Pro Asp Gly Pro Ser Thr Glu Ala Lys Tyr Leu Glu Ala Leu Ala Ser  
 85 90 95

Glu Thr Leu Leu Thr Ser Asp Glu Ala Val Val Val Ala Ala Ala Ala  
 100 105 110

Glu Ala Val Ala Leu Ala Arg Ala Ala Val Lys Val Ala Lys Asp Ala  
 115 120 125

Thr Leu Phe Lys Asn Ser Asn Asn Thr Asn Leu Leu Thr Ser Ser Thr  
 130 135 140

Ala Asp Lys Arg Ser Lys Trp Asp Gln Phe Thr Glu Lys Glu Arg Ala  
 145 150 155 160

Gly Ile Leu Gly His Leu Ala Val Ser Asp Asn Gly Ile Val Ser Asp  
 165 170 175

Lys Ile Thr Ala Ser Ala Ser Asn Lys Glu Ser Ile Gly Asp Leu Glu  
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Ala Lys Gly Leu Glu Lys Thr Ala Ser Gly Ile Pro Ser Val Lys Thr  
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 Asn Asp Pro Leu Arg Tyr Leu Arg Met Thr Thr Ser Ser Ser Lys Leu  
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 Gln Pro Thr Phe Ala Gln Trp Ala Ser Ala Ala Gly Val Asp Gln Lys  
 305 310 315 320  
 Ser Leu Arg Gln Arg Ile His His Gly Thr Leu Cys Lys Asp Lys Met  
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 Lys His Pro Lys Asn Glu Glu Ile Ala Glu Ala Thr Gly Leu Ser Met  
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 Ala Asp Pro Glu Ala Val Thr Ser Glu Asp Ile Leu Ile Lys Glu Phe  
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Lys Gln Val Ile Arg Trp Arg Phe Gly Met Glu Asp Gly Arg Met Lys  
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Lys Met Leu Arg Lys Pro Ser Arg Met Phe Ser Arg Asp Arg Gln Ser	
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Ser Gly Leu Ser Ser Pro Gly Pro Gly Gly Phe Ser Gln Pro Ser Val	
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Asn Glu Met Arg Arg Val Phe Ser Arg Phe Asp Leu Asp Lys Asp Gly	
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Lys Ile Ser Gln Thr Glu Tyr Lys Val Val Leu Arg Ala Leu Gly Gln	
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aga agt ggt ggg att agg tct tcg gat ata cga aat tct ttc tgg act 384  
Arg Ser Gly Gly Ile Arg Ser Ser Asp Ile Arg Asn Ser Phe Trp Thr  
115 120 125

ttt gat ttg aac ggc gat ggg aag ata agc gca gag gaa gtg atg tcg 432  
Phe Asp Leu Asn Gly Asp Gly Lys Ile Ser Ala Glu Glu Val Met Ser  
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Ser Gly Leu Ser Ser Pro Gly Pro Gly Gly Phe Ser Gln Pro Ser Val  
35 40 45

Asn Glu Met Arg Arg Val Phe Ser Arg Phe Asp Leu Asp Lys Asp Gly  
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Lys Ile Ser Gln Thr Glu Tyr Lys Val Val Leu Arg Ala Leu Gly Gln  
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Glu Arg Ala Ile Glu Asp Val Pro Lys Ile Phe Lys Ala Val Asp Leu  
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Asp Gly Asp Gly Phe Ile Asp Phe Arg Glu Phe Ile Asp Ala Tyr Lys  
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Arg Ser Gly Gly Ile Arg Ser Ser Asp Ile Arg Asn Ser Phe Trp Thr  
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Phe Asp Leu Asn Gly Asp Gly Lys Ile Ser Ala Glu Glu Val Met Ser  
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Val Leu Trp Lys Leu Gly Glu Arg Cys Ser Leu Glu Asp Cys Asn Arg  
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aac aaa aag tca aac aag aag cac gaa tca aat ggg aaa caa caa caa 96  
Asn Lys Lys Ser Asn Lys Lys His Glu Ser Asn Gly Lys Gln Gln Gln  
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caa caa gac gtc gat ggt ggt ggt ggg tgt ttg aga tca tca tgg atc 144  
Gln Gln Asp Val Asp Gly Gly Gly Gly Cys Leu Arg Ser Ser Trp Ile  
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Cys Lys Asn Ala Ser Cys Arg Ala Asn Val Pro Lys Glu Asp Ser Phe  
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tgc aag aga tgt tct tgt tgt gtt tgt cat aat ttc gat gaa aac aag 240  
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gag Glu	ttc Phe	tgt Cys	ggc Gly 100	tta Leu	tcg Ser	tgt Cys	cac His	att Ile 105	gag Glu	tgt Cys	gct Ala	ttt Phe	cga Arg 110	gaa Glu	gtc Val	336
aaa Lys	gtt Val	ggt Gly 115	gtt Val	att Ile	gct Ala	ctt Leu	ggg Gly 120	aat Asn	ctg Leu	atg Met	aag Lys	ctt Leu 125	gat Asp	ggt Gly	tgt Cys	384
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ttt Phe	agt Ser	gaa Glu	ttg Leu 180	cat His	gag Glu	att Ile	gtt Val	aga Arg 185	gct Ala	gct Ala	aag Lys	tct Ser	atg Met 190	ctg Leu	gag Glu	576
gat Asp	gaa Glu	gtt Val 195	gga Gly	cct Pro	ctt Leu	gat Asp	gga Gly 200	cct Pro	act Thr	gct Ala	aga Arg	act Thr 205	gat Asp	aga Arg	ggc Gly	624
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tct Ser 225	gca Ala	att Ile	aaa Lys	aag Lys	gca Ala 230	ggg Gly	gag Glu	ttg Leu	tca Ser	gcc Ala 235	aat Asn	gca Ala	ggt Gly	aga Arg	gat Asp 240	720
tta Leu	gtt Val	cca Pro	gct Ala	gcg Ala 245	tgc Cys	agg Arg	ttt Phe	cat His	ttc Phe 250	gaa Glu	gat Asp	att Ile	gca Ala	cca Pro 255	aag Lys	768
caa Gln	gtg Val	act Thr	ctt Leu 260	cgt Arg	ctg Leu	att Ile	gag Glu	cta Leu 265	cct Pro	agt Ser	gct Ala	gta Val	gaa Glu 270	tat Tyr	gat Asp	816
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gat Asp	gat Asp 290	tta Leu	ttt Phe	gtt Val	gat Asp	tgc Cys 295	agt Ser	aga Arg	act Thr	gag Glu	agg Arg 300	agg Arg	atg Met	gtg Val	ata Ile	912
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Pro His Gly Phe Asp Leu Asn Val Val Ser Val Pro Asp Leu Asn Glu	
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Leu Asn Ser Leu Ala Glu Ala Asp Gly Gly Asp His Asp Asp Asn Cys	
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Cys Lys Arg Cys Ser Cys Cys Val Cys His Asn Phe Asp Glu Asn Lys  
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 115 120 125

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ggt	gca	gaa	cag	gat	ttg	gtt	gat	gca	ttg	ggg	tat	ctg	aat	gcc	atc	672
Gly	Ala	Glu	Gln	Asp	Leu	Val	Asp	Ala	Leu	Gly	Tyr	Leu	Asn	Ala	Ile	
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Gln	Gln	Glu	His	Tyr	Ser	Tyr	Lys	Asp	Pro	Ile	Ile	Glu	Phe	Leu	Ala		
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Cys	Val	Phe	Val	Asn	Tyr	Asp	Phe	Asp	Gly	Ala	Gln	Lys	Lys	Met	Lys		
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Glu	Cys	Glu	Glu	Val	Ile	Val	Asn	Asp	Pro	Phe	Leu	Gly	Lys	Arg	Val		
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Ile	Asp	Met	Gly	Val	Leu	Ala	Glu	Lys	Leu	Asn	Leu	Asn	Tyr	Glu	Glu		
			340					345					350				
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Val Ser Phe Leu Leu Asn Pro Asn Ala Val Gln Glu Leu Arg Ala Asp  
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Lys Gln Tyr Asn Leu Gln Met Leu Lys Glu Arg Tyr Gln Ile Gly Pro  
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Asp Gln Ile Glu Ala Leu Tyr Gln Tyr Ala Lys Phe Gln Phe Glu Cys  
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Gly Asn Tyr Ser Gly Ala Ala Asp Tyr Leu Tyr Gln Tyr Arg Thr Leu  
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Cys Ser Asn Leu Glu Arg Ser Leu Ser Ala Leu Trp Gly Lys Leu Ala  
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Ser Glu Ile Leu Met Gln Asn Trp Asp Ile Ala Leu Glu Glu Leu Asn  
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Arg Leu Lys Glu Ile Ile Asp Ser Lys Phe Phe Ile Ala Val Lys Pro  
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Gly Ala Glu Gln Asp Leu Val Asp Ala Leu Gly Tyr Leu Asn Ala Ile  
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Val Asn Lys Arg Arg Arg Pro Gln Leu Lys Glu Phe Ile Lys Val Ile  
245 250 255

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Glu Cys Glu Glu Val Ile Val Asn Asp Pro Phe Leu Gly Lys Arg Val  
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Glu Asp Gly Asn Phe Ser Thr Val Pro Leu Arg Asp Glu Phe Leu Glu  
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Ile Asp Met Gly Val Leu Ala Glu Lys Leu Asn Leu Asn Tyr Glu Glu  
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Ala Glu Arg Trp Ile Val Asn Leu Ile Arg Thr Ser Lys Leu Asp Ala  
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Lys Ile Asp Ser Glu Ser Gly Thr Val Ile Met Glu Pro Thr Gln Pro  
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Phe	Asp	Leu	Glu	Pro	Leu	Met	Lys	Phe	Arg	Ile	Pro	Lys	Pro	Glu	Asp		
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Gln	Gly	Gly	Val	Val	Ala	Asn	Tyr	Ser	Asn	Gly	Ser	Lys	Ser	Arg	Met		
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Ile	Ala	Tyr	Glu	Pro	Ser	Tyr	Leu	Asp	Ile	Gly	Asp	Gly	Val	Ile	Tyr		
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Lys	Ile	Pro	Pro	Ser	Tyr	Asp	Lys	Leu	Val	Ala	Ser	Leu	Asn	Leu	Pro		
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ctt Leu	caa Gln	gct Ala	aga Arg 260	atg Met	aag Lys	gcc Ala	ctg Leu 265	tca Ser	cct Pro	tca Ser	aac Asn	tcc Ser	acc Thr 270	cca Pro	aat Asn	816
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tta Leu 305	cag Gln	gtc Val	cat His	tac Tyr	gtg Val 310	aag Lys	att Ile	ctg Leu	gag Glu	aag Lys 315	ggg Gly	gat Asp	aca Thr	tac Tyr	gag Glu 320	960
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gaa Glu	gga Gly 1400	gat Asp	gca Ala	act Thr	ttg Leu	gaa Glu 1405	gag Glu	tta Leu	gaa Glu	gat Asp	gtt Val 1410	gac Asp	cga Arg	cag Gln	4239
gat Asp	aac Asn 1415	gga Gly	cag Gln	gaa Glu	cct Pro	ttg Leu 1420	gaa Glu	gaa Glu	ccg Pro	gaa Glu	aag Lys 1425	cca Pro	aaa Lys	tcc Ser	4284
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cct Pro	cag Gln 1445	aaa Lys	gca Ala	aag Lys	gaa Glu	gaa Glu 1450	gca Ala	aat Asn	ggt Gly	gaa Glu	gat Asp 1455	act Thr	cct Pro	cag Gln	4374
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Gln Gly Gly Val Val Ala Asn Tyr Ser Asn Gly Ser Lys Ser Arg Met  
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Gly Arg Phe Tyr Asp Met Asp Asn Ser Pro Asn Phe Ala Ala Asp Val  
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Phe Cys Pro Asp Leu Lys Thr Leu Pro Tyr Trp Gly Gly Leu Gln Glu  
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Glu	Thr	Val	Glu	Glu	Lys	Ile	Leu	His	Arg	Ala	Ser	Gln	Lys	Asn
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Gln	Arg	Gln	His	Tyr	Leu	Pro	His	Ser	Gln	Pro	Leu	Ser	His	Tyr	Gln	
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Leu	Gln	Ser	Met	Asp	Thr	Val	Pro	Arg	Gln	Asp	His	Phe	Asp	Tyr	Arg	
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Gln Arg Gln His Tyr Leu Pro His Ser Gln Pro Leu Ser His Tyr Gln  
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Ser 225	Gln	Met	Asp	Leu	Asn 230	Thr	Ala	Lys	Val	Ile 235	Lys	Tyr	Gly	Ala	Gly 240
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Val	Cys	Asn	Glu 340	Asp	Gln	Arg	Met	Gln 345	Ile	Val	His	Ser	Ile 350	Thr	Arg
Lys	Pro	Gly 355	Leu	Leu	Ile	Lys	Ile 360	Ser	Cys	Asp	Met	His 365	Gly	Thr	Arg
Ala	Val 370	Gln	Lys	Ile	Val	Glu 375	Thr	Ala	Lys	Arg	Glu 380	Glu	Glu	Ile	Ser
Ile 385	Ile	Ile	Ser	Ala	Leu 390	Lys	His	Gly	Ile	Val 395	His	Leu	Ile	Lys	Asn 400



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Val Asn Gly Asn His Val Val Gln Arg Cys Leu Gln Tyr Leu Leu Pro  
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Tyr Cys Gly Lys Phe Leu Phe Glu Ala Ala Ile Thr His Cys Val Glu  
420 425 430

Leu Ala Thr Asp Arg His Gly Cys Cys Val Leu Gln Lys Cys Leu Gly  
435 440 445

Tyr Ser Glu Gly Glu Gln Lys Gln His Leu Val Ser Glu Ile Ala Ser  
450 455 460

Asn Ala Leu Leu Leu Ser Gln Asp Pro Phe Gly Ile Asp Ala Asn Phe  
465 470 475 480

Phe Cys Arg Asn Tyr Val Leu Gln Tyr Val Phe Glu Leu Gln Leu Gln  
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Trp Ala Thr Phe Glu Ile Leu Glu Gln Leu Glu Gly Asn Tyr Thr Glu  
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Leu Ser Met Gln Lys Cys Ser Ser Asn Val Val Glu Lys Cys Leu Lys  
515 520 525

Leu Ala Asp Asp Lys His Arg Ala Arg Ile Ile Arg Glu Leu Ile Asn  
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Tyr Gly Arg Leu Asp Gln Val Met Leu Asp Pro Tyr Gly Asn Tyr Val  
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Ile Gln Ala Ala Leu Lys Gln Ser Lys Gly Asn Val His Ala Leu Leu  
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<213> Arabidopsis thaliana

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ccc	acc	ttc	ttc	tcc	tca	gct	tcg	aca	aag	gct	tat	aat	ctc	cat	ttt	96
Pro	Thr	Phe	Phe	Ser	Ser	Ala	Ser	Thr	Lys	Ala	Tyr	Asn	Leu	His	Phe	
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Leu	Tyr	Ser	Asn	Ser	Thr	Gln	Arg	Leu	Thr	Asn	Pro	Lys	Phe	Gly	Ile	
		35					40					45				

ggc	ggg	aag	ttg	aag	gtg	acg	gtg	aat	ccg	tat	tcg	tat	aca	gag	gaa	192
Gly	Gly	Lys	Leu	Lys	Val	Thr	Val	Asn	Pro	Tyr	Ser	Tyr	Thr	Glu	Glu	
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Gly	Asp	Phe	Val	Asn	Ser	Asp	Gly	Gly	Asp	Gly	Gly	Pro	Pro	Arg	Trp	
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ttc	tca	ccg	ttg	gaa	tgt	ggc	gca	cgt	gct	cct	gaa	tct	cct	ctt	ctt	336
Phe	Ser	Pro	Leu	Glu	Cys	Gly	Ala	Arg	Ala	Pro	Glu	Ser	Pro	Leu	Leu	
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Leu	Tyr	Leu	Pro	Gly	Ile	Asp	Gly	Thr	Gly	Leu	Gly	Leu	Ile	Arg	Gln	
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His	Lys	Arg	Leu	Gly	Glu	Ile	Phe	Asp	Ile	Trp	Cys	Leu	His	Phe	Pro	
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Thr	Val	Arg	Ser	Glu	His	Tyr	Arg	Phe	Pro	Asn	Arg	Pro	Ile	Tyr	Ile	
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gtt	gga	gaa	tct	att	gga	gct	tct	ctt	gct	ctg	gat	gtt	gca	gcc	agt	576
Val	Gly	Glu	Ser	Ile	Gly	Ala	Ser	Leu	Ala	Leu	Asp	Val	Ala	Ala	Ser	
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aac	cct	gac	att	gat	ctt	gtc	ttg	att	ctg	gct	aat	cca	gtc	aca	cgt	624
Asn	Pro	Asp	Ile	Asp	Leu	Val	Leu	Ile	Leu	Ala	Asn	Pro	Val	Thr	Arg	
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gct	tcc	cca	ttg	aca	gaa	atg	ttc	gag	act	atg	ctc	aat	gaa	aat	gat
Ala	Ser	Pro	Leu	Thr	Glu	Met	Phe	Glu	Thr	Met	Leu	Asn	Glu	Asn	Asp
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gcc	gcg	cag	atg	ggt	aga	ggg	cta	tta	gga	gac	ttc	ttt	gca	act	tca
Ala	Ala	Gln	Met	Gly	Arg	Gly	Leu	Leu	Gly	Asp	Phe	Phe	Ala	Thr	Ser
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tct	aat	ctg	cct	act	ctg	att	aga	atc	ttt	ccc	aag	gac	aca	ctt	cta
Ser	Asn	Leu	Pro	Thr	Leu	Ile	Arg	Ile	Phe	Pro	Lys	Asp	Thr	Leu	Leu
		275					280					285			
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Trp	Lys	Leu	Gln	Leu	Leu	Lys	Ser	Ala	Ser	Ala	Ser	Ala	Asn	Ser	Gln
	290					295					300				
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Tyr	Arg	Arg	Gly	Lys	Ser	Leu	Asp	Tyr	Ile	Ser	Asp	Tyr	Ile	Leu	Pro
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Thr	Pro	Phe	Glu	Phe	Lys	Glu	Tyr	Glu	Glu	Ser	Gln	Arg	Leu	Leu	Thr
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Val	Arg	Ser	Leu	Ala	Gly	Ile	Pro	Ser	Glu	Gly	Pro	Val	Leu	Tyr	Val
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Gly	Asn	His	Met	Leu	Leu	Gly	Met	Glu	Leu	His	Ala	Ile	Ala	Leu	His
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Tyr	Lys	Leu	Leu	Arg	Ser	Lys	Ala	His	Val	Ala	Leu	Tyr	Pro	Gly	Gly	
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Val	Arg	Glu	Ala	Leu	His	Arg	Lys	Gly	Glu	Glu	Tyr	Lys	Leu	Phe	Trp	
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Pro	Glu	His	Ser	Glu	Phe	Val	Arg	Ile	Ala	Ser	Lys	Phe	Gly	Ala	Lys	
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Ile	Ile	Pro	Phe	Gly	Val	Val	Gly	Glu	Asp	Asp	Leu	Cys	Glu	Met	Val	
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Leu	Asp	Tyr	Asp	Asp	Gln	Met	Lys	Ile	Pro	Phe	Leu	Lys	Asn	Leu	Ile	
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Glu	Leu	Gly	Lys	Gln	Asp	Leu	His	Leu	Pro	Gly	Ile	Val	Pro	Lys	Ile	
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Pro	Gly	Arg	Phe	Tyr	Ala	Tyr	Phe	Gly	Lys	Pro	Ile	Asp	Thr	Glu	Gly	
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Arg	Glu	Lys	Glu	Leu	Asn	Asn	Lys	Glu	Lys	Ala	His	Glu	Val	Tyr	Leu	
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cag	gtc	aag	tct	gag	gta	gaa	aga	tgt	atg	aac	tat	ttg	aaa	atc	aaa	1968
Gln	Val	Lys	Ser	Glu	Val	Glu	Arg	Cys	Met	Asn	Tyr	Leu	Lys	Ile	Lys	
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Arg	Glu	Thr	Asp	Pro	Tyr	Arg	Asn	Ile	Leu	Pro	Arg	Ser	Leu	Tyr	Tyr	
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Leu	Thr	His	Gly	Phe	Ser	Ser	Gln	Ile	Pro	Thr	Phe	Asp	Leu	Arg	Asn	
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His																

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<213> Arabidopsis thaliana

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Gly Gly Lys Leu Lys Val Thr Val Asn Pro Tyr Ser Tyr Thr Glu Glu  
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Val Arg Pro Glu Glu Arg Lys Ser Leu Thr Asp Phe Leu Thr Glu Ala  
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Gly Asp Phe Val Asn Ser Asp Gly Gly Asp Gly Gly Pro Pro Arg Trp  
85 90 95

Phe Ser Pro Leu Glu Cys Gly Ala Arg Ala Pro Glu Ser Pro Leu Leu  
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Leu Tyr Leu Pro Gly Ile Asp Gly Thr Gly Leu Gly Leu Ile Arg Gln  
115 120 125

His Lys Arg Leu Gly Glu Ile Phe Asp Ile Trp Cys Leu His Phe Pro  
130 135 140

Val Lys Asp Arg Thr Pro Ala Arg Asp Ile Gly Lys Leu Ile Glu Lys  
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Thr Val Arg Ser Glu His Tyr Arg Phe Pro Asn Arg Pro Ile Tyr Ile  
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Val Gly Glu Ser Ile Gly Ala Ser Leu Ala Leu Asp Val Ala Ala Ser  
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Asn Pro Asp Ile Asp Leu Val Leu Ile Leu Ala Asn Pro Val Thr Arg  
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Ala Ala Gln Met Gly Arg Gly Leu Leu Gly Asp Phe Phe Ala Thr Ser  
260 265 270

Ser Asn Leu Pro Thr Leu Ile Arg Ile Phe Pro Lys Asp Thr Leu Leu  
275 280 285

Trp Lys Leu Gln Leu Leu Lys Ser Ala Ser Ala Ser Ala Asn Ser Gln  
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Met Asp Thr Val Asn Ala Gln Thr Leu Ile Leu Leu Ser Gly Arg Asp  
305 310 315 320

Gln Trp Leu Met Asn Lys Glu Asp Ile Glu Arg Leu Arg Gly Ala Leu  
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Pro Arg Cys Glu Val Arg Glu Leu Glu Asn Asn Gly Gln Phe Leu Phe  
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Leu Glu Asp Gly Val Asp Leu Val Ser Ile Ile Lys Arg Ala Tyr Tyr  
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Tyr Arg Arg Gly Lys Ser Leu Asp Tyr Ile Ser Asp Tyr Ile Leu Pro  
370 375 380

Thr Pro Phe Glu Phe Lys Glu Tyr Glu Glu Ser Gln Arg Leu Leu Thr  
385 390 395 400

Ala Val Thr Ser Pro Val Phe Leu Ser Thr Leu Lys Asn Gly Ala Val  
405 410 415

Val Arg Ser Leu Ala Gly Ile Pro Ser Glu Gly Pro Val Leu Tyr Val  
420 425 430

Gly Asn His Met Leu Leu Gly Met Glu Leu His Ala Ile Ala Leu His  
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Phe Leu Lys Glu Arg Asn Ile Leu Leu Arg Gly Leu Ala His Pro Leu  
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Met Phe Thr Lys Lys Thr Gly Ser Lys Leu Pro Asp Met Gln Leu Tyr  
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Asp Leu Phe Arg Ile Ile Gly Ala Val Pro Val Ser Gly Met Asn Phe  
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Tyr Lys Leu Leu Arg Ser Lys Ala His Val Ala Leu Tyr Pro Gly Gly  
500 505 510

Val Arg Glu Ala Leu His Arg Lys Gly Glu Glu Tyr Lys Leu Phe Trp  
515 520 525

Pro Glu His Ser Glu Phe Val Arg Ile Ala Ser Lys Phe Gly Ala Lys  
530 535 540

Ile Ile Pro Phe Gly Val Val Gly Glu Asp Asp Leu Cys Glu Met Val  
545 550 555 560

Leu Asp Tyr Asp Asp Gln Met Lys Ile Pro Phe Leu Lys Asn Leu Ile  
565 570 575

Glu Glu Ile Thr Gln Asp Ser Val Asn Leu Arg Asn Asp Glu Glu Gly  
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Glu Leu Gly Lys Gln Asp Leu His Leu Pro Gly Ile Val Pro Lys Ile  
595 600 605

Pro Gly Arg Phe Tyr Ala Tyr Phe Gly Lys Pro Ile Asp Thr Glu Gly  
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Gln Val Lys Ser Glu Val Glu Arg Cys Met Asn Tyr Leu Lys Ile Lys  
645 650 655

Arg Glu Thr Asp Pro Tyr Arg Asn Ile Leu Pro Arg Ser Leu Tyr Tyr  
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Leu Thr His Gly Phe Ser Ser Gln Ile Pro Thr Phe Asp Leu Arg Asn  
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His

<210> 45

<211> 1038

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<213> *Arabidopsis thaliana*

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&lt;400&gt; 45

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Gly	Ser	Val	Ala	Ala	Ser	Ser	Ser	Val	Gly	Ser	Ser	Ser	Ser	Pro	Arg	
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Thr	Tyr	Glu	Met	Val	Glu	Asp	Pro	Ala	Thr	Asp	Thr	Val	Val	Ser	Trp	
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Thr	Thr	Leu	Leu	Pro	Arg	Tyr	Phe	Lys	His	Ser	Asn	Phe	Ser	Ser	Phe	
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Trp	Glu	Phe	Ala	Asn	Glu	Gly	Phe	Leu	Ala	Gly	Gln	Lys	His	Leu	Leu	
		115					120					125				

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Lys	Asn	Ile	Lys	Arg	Arg	Arg	Asn	Met	Gly	Leu	Gln	Asn	Val	Asn	Gln	
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Gln	Gly	Ser	Gly	Met	Ser	Cys	Val	Glu	Val	Gly	Gln	Tyr	Gly	Phe	Asp	
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Gly	Glu	Val	Glu	Arg	Leu	Lys	Arg	Asp	His	Gly	Val	Leu	Val	Ala	Glu	
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gta	gtt	agg	ttg	agg	caa	cag	caa	cac	agc	tcc	aag	agt	caa	gtt	gca	576
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Phe Ala Val Met Ser Lys Glu Lys Lys Ser Leu Phe Gly Leu Asp Val	
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gat ggt aat ttg gaa gca gcg ttg gat gtg aaa gtg gaa gat ttg gtt	960
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atg Met 1235	gct Ala	tct Ser	ctt Leu	ctt Leu	gaa Glu	ata Ile 1240	ggt Gly	tac Tyr	caa Gln	gta Val	aga Arg 1245	ttt Phe	gga Gly	atc Ile	3744
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gca Ala 1310	ccg Pro	ttc Phe	cgc Arg	tca Ser	atc Ile	acg Thr 1315	gtg Val	aga Arg	gac Asp	aca Thr	atc Ile 1320	ggc Gly	gat Asp	ctt Leu	3969
cca Pro 1325	cta Leu	gta Val	gaa Glu	aac Asn	gga Gly	gag Glu 1330	tcc Ser	aag Lys	ata Ile	aac Asn	aaa Lys 1335	gag Glu	tat Tyr	aga Arg	4014
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agt Ser 1355	gtt Val	ctc Leu	act Thr	gat Asp	cat His	atc Ile 1360	tgc Cys	aaa Lys	ggg Gly	ctg Leu	aat Asn 1365	gaa Glu	cta Leu	aac Asn	4104
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Cys	Ala	Arg	Ser	Gln	Gly	Phe	Pro	Asp	Ser	Tyr	Glu	Phe	Ser	Gly	
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Thr	Thr	Lys	His	Lys	His	Arg	Gln	Ile	Gly	Asn	Ala	Val	Pro	Pro	
1475						1480					1485				
cca	ttg	gca	ttc	gct	ctc	ggt	cgg	aag	ctc	aaa	gaa	gcc	cta	tat	4509
Pro	Leu	Ala	Phe	Ala	Leu	Gly	Arg	Lys	Leu	Lys	Glu	Ala	Leu	Tyr	
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Gly Arg Val<sub>130</sub> Glu Asn Trp Asn<sub>135</sub> Ile Ser Gly Tyr Glu<sub>140</sub> Asp Gly Ser Pro

Gly Ile Trp Ile Ser Thr<sub>150</sub> Ala Leu Ala Asp Tyr<sub>155</sub> Asp Cys Arg Lys Pro<sub>160</sub>

Ala Ser Lys Tyr Lys<sub>165</sub> Lys Ile Tyr Asp Tyr<sub>170</sub> Phe Phe Glu Lys Ala Cys<sub>175</sub>

Ala Cys Val Glu<sub>180</sub> Val Phe Lys Ser Leu<sub>185</sub> Ser Lys Asn Pro Asp<sub>190</sub> Thr Ser

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Ile Phe Ser Ser Gly Gly Ala<sub>215</sub> Ile Gln Glu Phe Val<sub>220</sub> Ile Ser Gln Gly

Glu Phe Ile Tyr Asn Gln<sub>230</sub> Leu Ala Gly Leu Asp<sub>235</sub> Glu Thr Ala Lys Asn<sub>240</sub>

His Glu Thr Cys Phe<sub>245</sub> Val Glu Asn Ser Val<sub>250</sub> Leu Val Ser Leu Arg Asp<sub>255</sub>

His Glu Ser Ser<sub>260</sub> Lys Ile His Lys Ala<sub>265</sub> Leu Ser Asn Val Ala<sub>270</sub> Leu Arg

Ile Asp Glu<sub>275</sub> Ser Gln Leu Val Lys<sub>280</sub> Ser Asp His Leu Val<sub>285</sub> Asp Gly Ala

Glu Ala Glu Asp Val Arg Tyr<sub>295</sub> Ala Lys Leu Ile Gln<sub>300</sub> Glu Glu Glu Tyr

Arg Ile Ser Met Glu Arg<sub>310</sub> Ser Arg Asn Lys Arg<sub>315</sub> Ser Ser Thr Thr Ser<sub>320</sub>

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 370 375 380  
 Met Ile Ser Leu Glu Val Leu Pro Met Arg Pro Cys Ala Glu Ile Asp  
 385 390 395 400  
 Val Thr Val Phe Gly Ser Gly Val Val Ala Glu Asp Asp Gly Ser Gly  
 405 410 415  
 Phe Cys Leu Asp Asp Ser Glu Ser Ser Thr Ser Thr Gln Ser Asn Val  
 420 425 430  
 His Asp Gly Met Asn Ile Phe Leu Ser Gln Ile Lys Glu Trp Met Ile  
 435 440 445  
 Glu Phe Gly Ala Glu Met Ile Phe Val Thr Leu Arg Thr Asp Met Ala  
 450 455 460  
 Trp Tyr Arg Leu Gly Lys Pro Ser Lys Gln Tyr Ala Pro Trp Phe Glu  
 465 470 475 480  
 Thr Val Met Lys Thr Val Arg Val Ala Ile Ser Ile Phe Asn Met Leu  
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 Arg Leu Cys Gly Leu Glu Glu Asn Asp Lys Ala Tyr Ile Ser Ser Lys  
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 545 550 555 560  
 Val Thr Gly Leu Ala Ser Lys Met Gln Asp Ile His His Thr Lys Trp  
 565 570 575  
 Ile Ile Lys Arg Lys Lys Lys Ile Leu Gln Lys Gly Lys Asn Leu Asn  
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532622010700seq

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Ser Gly Phe Cys Ser Ser Cys Lys Ile Lys Glu Glu Glu Glu Arg  
850 855 860

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865 870 875 880

Ile Glu Tyr Tyr Asn Gly Asp Phe Val Tyr Val Leu Pro Asn Tyr Ile  
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Thr Lys Asp Gly Leu Lys Lys Gly Thr Ser Arg Arg Thr Thr Leu Lys  
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Cys Gly Arg Asn Val Gly Leu Lys Ala Phe Val Val Cys Gln Leu Leu  
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Asp Val Ile Val Leu Glu Glu Ser Arg Lys Ala Ser Asn Ala Ser Phe  
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Gln Val Lys Leu Thr Arg Phe Tyr Arg Pro Glu Asp Ile Ser Glu Glu  
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Lys Ala Tyr Ala Ser Asp Ile Gln Glu Leu Tyr Tyr Ser His Asp Thr  
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Tyr Ile Leu Pro Pro Glu Ala Leu Gln Gly Lys Cys Glu Val Arg Lys  
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Lys Asn Asp Met Pro Leu Cys Arg Glu Tyr Pro Ile Leu Asp His Ile  
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Gln Phe Pro Ala Asn Met Lys Leu Lys Phe Ser Thr Ile Lys Asp  
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Thr	Tyr	Ser	Ile	Lys	Lys	Pro	Leu	Asn	Asp	Ala	Val	Tyr	Gly	Ala	His	
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Gly	Asp	Phe	Thr	Val	Ala	Leu	Lys	Tyr	Val	Thr	Ile	Leu	Thr	Ile	Phe	
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Gly	Glu	Ile	Gly	Ser	Phe	Val	Thr	Pro	Glu	Tyr	Val	Ser	Glu	Leu	Leu	
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Glu	Lys	Ala	Phe	Leu	Leu	Asn	Thr	Val	Gly	Asn	Arg	Leu	Phe	Tyr	Met	
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Met Glu Trp Glu Lys Trp Tyr Leu Asp Ala Val Leu Val Pro Ser Ala	
1 5 10 15	
Leu Leu Met Met Phe Gly Tyr His Ile Tyr Leu Trp Tyr Lys Val Arg	
20 25 30	
Thr Asp Pro Phe Cys Thr Ile Val Gly Thr Asn Ser Arg Ala Arg Arg	
35 40 45	
Ser Trp Val Ala Ala Ile Met Lys Asp Asn Glu Lys Lys Asn Ile Leu	
50 55 60	
Ala Val Gln Thr Leu Arg Asn Thr Ile Met Gly Gly Thr Leu Met Ala	
65 70 75 80	
Thr Thr Cys Ile Leu Leu Cys Ala Gly Leu Ala Ala Val Leu Ser Ser	
85 90 95	
Thr Tyr Ser Ile Lys Lys Pro Leu Asn Asp Ala Val Tyr Gly Ala His	
100 105 110	
Gly Asp Phe Thr Val Ala Leu Lys Tyr Val Thr Ile Leu Thr Ile Phe	
115 120 125	
Leu Phe Ala Phe Phe Ser His Ser Leu Ser Ile Arg Phe Ile Asn Gln	
130 135 140	
Val Asn Ile Leu Ile Asn Ala Pro Gln Glu Pro Phe Ser Asp Asp Phe	



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145                      150                      155                      160

Gly Glu Ile Gly Ser Phe Val Thr Pro Glu Tyr Val Ser Glu Leu Leu  
                                 165                                   170                                   175

Glu Lys Ala Phe Leu Leu Asn Thr Val Gly Asn Arg Leu Phe Tyr Met  
                                 180                                   185                                   190

Gly Leu Pro Leu Met Leu Trp Ile Phe Gly Pro Val Leu Val Phe Leu  
                                 195                                   200                                   205

Ser Ser Ala Leu Ile Ile Pro Val Leu Tyr Asn Leu Asp Phe Val Phe  
                                 210                                   215                                   220

Leu Leu Ser Asn Lys Glu Lys Gly Lys Val Asp Cys Asn Gly Gly Cys  
225                                   230                                   235                                   240

Asp Asp Asn Phe Ser Pro  
                                 245